

CORNELL UNIVERSITY OFFICIAL PUBLICATION

Volume XVII

Number 7

Announcement of the Thirty-Fifth

Summer Session

1926

July 3—August 13

Ithaca, New York
Published by the University
March 1, 1926

ANNOUNCEMENT OF THE SUMMER SESSION

This pamphlet is designed to give prospective students complete information about the Summer Session of Cornell University. On the last page there is a list of other publications which describe the courses of study offered during the regular academic year by the several colleges and schools of the University.

SUMMER SESSION OF THE LAW SCHOOL

See page 48 for information about the summer courses in Law to be given at Cornell University in 1926.

THE SUMMER SCHOOL OF BIOLOGY

See page 49 for information about the summer courses in Biology to be given at Cornell University in 1926.

THE SUMMER SCHOOL OF AGRICULTURE

See page 55 for information about the summer courses in Agriculture to be given at Cornell University in 1926.

OFFICE AT GOLDWIN SMITH 252

The office of the Summer Session is in Room 252, Goldwin Smith Hall. This office will be open as a bureau of information on registration day from 9 A. M. till 1 P. M. and from 2 till 5 P. M., and thereafter, throughout the session, daily except Saturday from 9 till 12:30 and from 2 till 4.

Members of the staff of instruction may be consulted at their offices on Monday, July 5.

THE SESSION MUST BEGIN PROMPTLY

In order to get the full number of exercises announced for the session, it is necessary that all work begin promptly on Monday morning, July 5. Students are urged to reach Ithaca in time to be present at the first exercise of each class. If possible, the student should register on Saturday, July 3; if not, then on Monday, July 5, in an hour not occupied by class work.

THE CALENDAR

SUMMER SESSION OF 1926

THE FIRST TEN DAYS

July 3, Saturday, 8 A. M.-5 P. M.	Registration, <i>Room A, Goldwin Smith Hall.</i>
July 5, Monday.....	Instruction begins at the time and place announced for each course. Registration is continued in the Registrar's Office, <i>Morrill Hall.</i>
July 6, Tuesday evening.....	Organ Recital, <i>Sage Chapel.</i>
July 7, Wednesday evening.....	Departmental Lectures and Conferences.
July 8, Thursday evening.....	Piano Recital, Mr. Ernest R. Kroeger.
July 9, Friday, until 4 P. M.....	Last day for payment of fees at the Treasurer's office, <i>1 Morrill Hall.</i>
July 11, Sunday, 11 A. M.....	Public Worship and Sermon in <i>Sage Chapel.</i>
July 11, Sunday evening.....	Organ Recital, <i>Bailey Hall.</i>
July 12, Monday evening.....	Lecture Course, <i>Barnes Hall.</i>

THE REGULAR WEEKLY SCHEDULE

Sunday, 11 A. M.	Public Worship and Sermon, <i>Sage Chapel.</i>	(Beginning July 11.)
Sunday evening,	Organ Recital, <i>Bailey Hall.</i>	(Beginning July 11.)
Monday evening,	Lecture Course, <i>Barnes Hall.</i>	(Beginning July 12.)
Tuesday evening,	Organ Recital, <i>Sage Chapel.</i>	(Beginning July 6.)
Wednesday evening,	Departmental Lectures and Conferences.	(Beginning July 7.)
Thursday evening,	Piano Recital, Mr. Kroeger.	(Beginning July 8.)
Friday evening,	Plays by Summer Theater Company.	(Beginning July 9.)
Saturday evening,	Plays by Summer Theater Company.	(Beginning July 10.)

CONCERTS

Friday evening: Concert.	<i>Bailey Hall.</i>	Artist to be announced.
Friday evening: Concert.	<i>Bailey Hall.</i>	Artist to be announced.

THE LAST DAY

August 13, Friday.....	Summer Session ends.
------------------------	----------------------

THE WEEKLY CALENDAR

The WEEKLY CALENDAR of the University carries announcements of all public exercises held in connection with the Summer Session. It is posted on the bulletin boards.

THE SUMMER SESSION OF 1926

OFFICERS

The President of the University

LIVINGSTON FARRAND, A.B., M.D., L.H.D., LL.D.

ADMINISTRATIVE BOARD

Executive Committee

RIVERDA HARDING JORDAN, Ph.D., *Chairman*

BENTON SULLIVAN MONROE, Ph.D., *Secretary*

ROLLINS ADAMS EMERSON, D.Sc., Dean of the Graduate School

DEXTER SIMPSON KIMBALL, M.E., Dean of the College of Engineering

ROBERT MORRIS OGDEN, Ph.D., Dean of the College of Arts and Sciences

GEORGE ALAN WORKS, Ph.B., M.S.A., Director, Summer School of Agriculture

The Registrar

DAVID FLETCHER HOY, M.S.

The Dean of Women

STAFF OF INSTRUCTION

(The names of the instructors in the Summer School of Agriculture are printed on page 55; those of the instructors in the Summer Session of the Law School, on page 48; those of the instructors in the Summer School of Biology, on page 49.)

BRISTOW ADAMS, B.A. Drawing and Painting
(Professor in the Extension Service)

ERNEST ALBEE, Ph.D. Philosophy
(Professor of Philosophy)

WILLIAM L. ANDERSON, M.D. Physical Education
(Supervisor of Physical Training, Stuyvesant High School, New York)

ALBERT LEROY ANDREWS, Ph.D. German
(Assistant Professor of German)

GEORGE MONROE BATEMAN, B.S. Chemistry
(Assistant in Chemistry)

IRVING TRACY BEACH, B.Chem. Chemistry
(Assistant in Chemistry)

CARL BECKER, Ph.D. History
(Professor of Modern European History)

CHARLES ERNEST BENNETT, Ph.D. Latin
(Professor of Latin, Amherst College)

JEROME H. BENTLEY, M.A. Education
(Secretary for Education, New York City Y. M. C. A.
Late Superintendent of Schools, Duluth, Minn., and Richmond, Ind.)

SAMUEL LATIMER BOOTHROYD, B.S. Astronomy
(Professor of Astronomy and Geodesy)

JULIAN PLEASANT BRETZ, Ph.D. History
(Professor of American History)

THOMAS ROLAND BRIGGS, Ph.D. Chemistry
(Professor of Physical Chemistry and Electro-Chemistry)

LILLIAN FRED BROTHERHOOD, A.M. Geology
(Professor of Geology, College of St. Elizabeth)

LESLIE NATHAN BROUGHTON, Ph.D. English
(Assistant Professor of English)

STAFF OF INSTRUCTION

5

ARTHUR WESLEY BROWNE, Ph.D.	Chemistry
(Professor of Inorganic and Analytical Chemistry)	
EARLE NELSON BURROWS, M.C.E.	Structural Engineering
(Assistant Professor of Structural Engineering)	
HARRY CAPLAN, Ph.D.	Greek
(Assistant Professor of Classics)	
WALTER BUCKINGHAM CARVER, Ph.D.	Mathematics
(Professor of Mathematics)	
HARCOURT LENHART CAVERLY, A.B.	Economics
(Assistant Professor of Economics, University of Michigan)	
JACOB ROLAND COLLINS, Ph.D.	Physics
(Assistant Professor of Physics)	
ROBERT BRAINARD COREY, Ph.D.	Chemistry
(Instructor in Chemistry)	
RALPH THOMAS KLINE CORNWELL, Ph.D.	Chemistry
(Instructor in Chemistry)	
CLYDE FIRMAN CRAIG, Ph.D.	Mathematics
(Assistant Professor of Mathematics)	
ROGER GEORGES CROS, Licencié es Lettres.	French
(Instructor in French, Culver Military Academy)	
JAMES WHITE CROWELL, A.M.	Spanish
(Assistant Professor of Spanish, Colorado College)	
HENRY S. CURTIS, Ph.D.	Physical Education
(Director of Hygiene and Physical Education, State of Missouri)	
ROBERT E. CUSHMAN, Ph.D.	Government
(Professor of Government)	
GEORGE IRVING DALE, Ph.D.	Spanish
(Professor of Romance Languages)	
KARL M. DALLENBACH, Ph.D.	Psychology
(Assistant Professor of Psychology)	
CHARLES ELIJAH DECKER, Ph.D.	Geology
(Professor of Geology, University of Oklahoma)	
HARWOOD BURROWS DOLBEARE, A.B.	Economics
(Assistant in Economics)	
ALEXANDER M. DRUMMOND, A.M.	Public Speaking
(Professor of Public Speaking)	
LIDA B. EARHART, Ph.D.	Rural Education
(Late Professor of Elementary Education, University of Nebraska)	
JENNETTE EVANS, M.D.	Hygiene
(Assistant Professor of Hygiene and Medical Adviser of Women)	
ALBERT BERNHARDT FAUST, Ph.D.	German
(Professor of German)	
SAMUEL FELDMAN, Ph.D.	Psychology
(Instructor in Psychology)	
FRANK SAMUEL FREEMAN, Ed.M.	Education
(Instructor in Education)	
SEYMOUR STANTON GARRETT, C.E.	Mechanics of Engineering
(Professor of Mechanics of Engineering)	
JEAN M. GELAS	Physical Education
(Instructor in Physical Education, Hamilton College)	
ROSSELL CLIFTON GIBBS, Ph.D.	Physics
(Professor of Physics)	
ARTHUR WARD GILBERT, B.S.	Education
(Instructor in Education)	

DAVID CLINTON GILLESPIE, Ph.D.	Mathematics
(Professor of Mathematics)	
WILBUR ELWYN GILMAN, A.B.	Public Speaking
(Instructor in Public Speaking)	
ADRIAN G. GOULD, M.D.	Physical Education
(Assistant Professor of Hygiene and Assistant Medical Adviser)	
MASON D. GRAY, Ph.D.	Latin
(Head of Department of Latin, East High School, Rochester)	
GUY SHEPARD GREENE, Ph.D.	English
(Instructor in English)	
OTHON G. GUERLAC, Licencié es lettres, Licencié en droit, M.A., LL.B.	French
(World War Memorial Professor of the Romance Languages and Literatures)	
WILLIAM ALEXANDER HAMMOND, Ph.D.	Philosophy
(Sage Professor of Ancient Philosophy and of Aesthetics)	
ROBERT HANNAH, A.M.	Public Speaking
(Instructor in Public Speaking)	
JOHN WILLIAM HEBEL, Ph.D.	English
(Assistant Professor of English)	
HARLEY EARL HOWE, Ph.D.	Physics
(Assistant Professor of Physics)	
ERIC VAIL HOWELL, M.C.E.	Mechanics
(Assistant Professor of Mechanics)	
HOULDER HUDGINS, A.B.	Economics
(Instructor in Economics and Accounting)	
EDWARD WESLEY HUGHES	Chemistry
(Assistant in Chemistry)	
LEE SISSON HULTZEN, A.B.	Public Speaking
(Late Assistant Professor of Public Speaking, Washington University)	
HOWARD LOUIS HUNTER	Chemistry
(Assistant in Chemistry)	
WALLIE ABRAHAM HURWITZ, Ph.D.	Mathematics
(Professor of Mathematics)	
JOHN IRWIN HUTCHINSON, Ph.D.	Mathematics
(Professor of Mathematics)	
RIVERDA HARDING JORDAN, Ph.D.	Education
(Professor of Education)	
WILLIAM R. KINGERY, A.B.	Romance Languages
(Instructor in Romance Languages)	
GEORGE KREEZER	Psychology
(Assistant in Psychology)	
ERNEST R. KROEGER	Music
(Director, Kroeger School of Music, St. Louis)	
HAROLD TALBOT LACEY, B.Chem.	Chemistry
(Assistant in Chemistry)	
MAX LUDWIG WOLFRAM LAISTNER, M.A.	History
(Professor of Ancient History)	
HENRY LEIGHTON, A.B.	Geology
(Professor of Geology, University of Pittsburgh)	
ROBERT EDWARD LOVING, Ph.D.	Physics
(Professor of Physics, Richmond College)	
ASA EMANUEL MCKINNEY, Ph.D.	Chemistry
(Instructor in Chemistry)	
CLYDE WALTER MASON, Ph.D.	Chemistry
(Instructor in Chemistry)	

STAFF OF INSTRUCTION

7

JAMES FREDERICK MASON, Ph.D.	French
(Professor of Romance Languages and Literatures)	
FREDERICK ARTHUR MAY, A.B.	Physics
(Instructor in Physics)	
BRUCE LEE MELVIN, Ph.D.	Economics
(Acting Professor of Rural Social Organization)	
BENTON SULLIVAN MONROE, Ph.D.	English
(Assistant Professor of English)	
CLYDE B. MOORE, Ph.D.	Education
(Professor of Rural Education)	
GUY BROOKS MUCHMORE, A.B.	Public Speaking
(Assistant Professor of Public Speaking)	
MELVIN L. NICHOLS, Ph.D.	Chemistry
(Assistant Professor of Chemistry)	
CLARK SUTHERLAND NORTHUP, Ph.D.	English
(Professor of English and Librarian of the Hart Memorial Library)	
WALLACE NOTESTEIN, Ph.D., Litt.D.	History
(Professor of English History)	
WALTER C. O'CONNELL	Physical Education
(Assistant Director of the Gymnasium)	
PAUL MARTIN O'LEARY, M.A.	Economics
(Instructor in Economics)	
FREDERICK WILLIAM OWENS, Ph.D.	Mathematics
(Assistant Professor of Mathematics)	
ANDREW PROSPER PELMONT, A.B.	French
(Instructor in Romance Languages and Literatures)	
HAROLD CHARLES PERKINS, M.E.	Mechanics
(Assistant Professor of Mechanics)	
MILES ALBION POND, Ph.B.	Descriptive Geometry
(Assistant Professor of Civil Engineering)	
CARLTON ELDERKIN POWER, Ph.D.	Physics
(Assistant Professor of Physics, New York State College for Teachers)	
LAURENCE PUMPELLE, Ph.D.	French
(Professor of Romance Languages and Literatures)	
HAROLD LYLE REED, Ph.D.	Economics
(Professor of Economics and Finance)	
ERNEST WILLIAM RETTGER, Ph.D.	Mechanics
(Professor of Mechanics of Engineering)	
FRED STILLMAN ROGERS, M.E.	Kinematics
(Professor of Machine Design)	
WILLIAM CARL RUEDIGER, Ph.D.	Education
(Dean, Teachers College, George Washington University)	
MARY C. RYAN	Physical Education
(Instructor in Physical Education)	
MARTIN WRIGHT SAMPSON, M.A.	English
(Goldwin Smith Professor of English Literature)	
ERNEST WILLIAM SCHODER, Ph.D.	Hydraulics
(World War Memorial Professor of Experimental Hydraulics)	
HERMAN EASTMAN SEEMANN, A.B.	Physics
(Instructor in Physics)	
HARRY W. SEITZ	Music
(Supervisor of High School Music, Detroit, Mich.)	
FRANCIS ROBERT SHARPE, Ph.D.	Mathematics
(Professor of Mathematics)	

DEAN FRANKLIN SMILEY, M.D.	Hygiene
(Assistant Professor of Hygiene and Medical Adviser)	
DONALD E. SMITH, Ph.D.	History
(Head of Department of History, George Washington High School, New York City)	
HAROLD D. SMITH, Mus.D.	Music
(Assistant Professor of Music)	
VIRGIL SNYDER, Ph.D.	Mathematics
(Professor of Mathematics)	
WALTER HUTCHINSON STANTON, A.B.	Public Speaking
(Instructor in Physics)	
WALTER KING STONE	Drawing and Painting
(Assistant Professor of Drawing)	
WILLIAM STRUNK, jr., Ph.D.	English
(Professor of English)	
RENE TAUPIN, Licencié es Lettres	French
(Haverford College)	
CHARLES KENNETH THOMAS, A.B.	Public Speaking
(Instructor in Public Speaking)	
EDWARD BRADFORD TITCHENER, Ph.D., LL.D., D.Sc., Litt.D.	Psychology
(Sage Professor of Psychology in the Graduate School, Lecturer in Psychology)	
CLARENCE ELLSWORTH TOWNSEND, M.E.	Mechanical Drawing
(Professor of Drawing in the College of Engineering)	
CARL WILLIAM TUCKER, B.S., M.S.	Chemistry
(Assistant in Chemistry)	
FORREST GLENN TUCKER, Ph.D.	Physics
(Assistant Professor of Physics)	
LEONARD CHURCH UROUHART, C.E.	Structural Engineering
(Professor of Structural Engineering)	
ABBOTT PAYSON USHER, Ph.D.	Economics
(Associate Professor of Economics, Harvard University)	
WESLEY G. VANNOY, M.S.	Chemistry
(Assistant in Chemistry)	
MARJORIE D. VAN ORDER	Geology
(Assistant in Geology)	
STEPHEN SARGENT VISHER, Ph.D.	Geology
(Associate Professor of Geology, Indiana University)	
OSCAR DIEDRICH VON ENGELN, Ph.D.	Geography and Geology
(Professor of Physical Geography)	
SETH WAKEMAN, Ph.D.	Education
(Professor of Education, Smith College)	
HARRY PORTER WELD, Ph.D.	Psychology
(Professor of Psychology)	
HERBERT AUGUST WICHELSNS, Ph.D.	Public Speaking
(Assistant Professor of Public Speaking)	
CHARLES V. P. YOUNG, A.B.	Physical Education
(Professor of Physical Education and Director of the Gymnasium)	
MIGUEL ZAPATA Y TORRES, A.B.	Spanish
(Instructor in Romance Languages and Literatures)	

OBJECT OF THE SESSION

INSTRUCTION ADAPTED TO VARIOUS NEEDS

The primary object of the Summer Session is to advance education by helping those engaged in it. The instruction is adapted to the needs of the following classes:

1. Professors and teachers in colleges and schools, superintendents, and supervisors of special branches of instruction.

The announcements of the different departments show a wide range of work. This work is either advanced and, therefore, suited to specialists who wish to pursue their individual study; or more elementary and adapted to teachers who desire to start in a new field. In addition to the instruction of the classroom, the University's libraries, museums, laboratories, and shops are open for use.

2. College students in Cornell or other universities who wish to make some scholastic use of the long vacation, especially those whose college studies may for one reason or another have been interrupted. Graduates may count some of the courses toward an advanced degree. See the Announcement of the Graduate School with regard to opportunities for advanced work and research during the summer.

Undergraduates may anticipate requirements and thereby shorten their course, or may make up existing deficiencies. The conditions for receiving credit, and the amount which may be obtained, are stated below, under the head of Academic Credit for Work.

3. Students entering the University and wishing to obtain surplus credit at entrance, or to complete the entrance requirements.

It often happens that students have in June more or less than the requirements for admission to college. The Summer Session affords them the opportunity either to add to their surplus and thus, in some cases, to gain a year in time; or to make up their deficiency.

4. All persons qualified to pursue with profit any course given, whether or not they are engaged in formal study or teaching.

ACADEMIC CREDIT FOR WORK

IN THE COLLEGE OF ARTS AND SCIENCES

The academic requirements for the degree of Bachelor of Arts are the completion of one hundred and twenty hours of elective work. Before graduation a student must complete six hours in certain specified groups of study, thirty of these hours during the first two years, under certain restrictions (the underclass requirements). During his last two years he must also elect twenty hours in some one department or group of related departments (the upperclass requirements).

To obtain credit toward the Cornell degree by means of work done in Summer Sessions, a student must have previously satisfied the entrance requirements of the College, and must obtain in advance

the Dean's approval of his selection of courses. He may then obtain in any Summer Session credit for the number of hours he passes. To obtain credit for a term of residence he must pass a total of at least twelve hours in two or more Summer Sessions, with a minimum of four or a maximum of eight in each Session. Credit for two terms of residence, but no more, may be secured in this way.

IN OTHER COLLEGES OF THE UNIVERSITY

The nature and amount of credit allowed in other colleges at Cornell for work in the Summer Session may be learned from the statements under the announcement of each course.

IN THE GRADUATE SCHOOL

Graduate work at Cornell is not expressed in terms of courses or of hours. A graduate of any college whose requirements for a first degree are substantially equivalent to those for the first degree at Cornell may be admitted to resident study in the Graduate School. He may at once enter upon candidacy for an advanced degree if he is able to show that he has had adequate preliminary training in the subjects in which he proposes to work. The requirements for the degree do not depend primarily on the completion of any prescribed number of courses or of a fixed term of residence. They are rather based upon actual achievement in scholarship and research in the fields indicated by the major and minor subjects. The writing of a thesis and the passing of a special examination are also required. The minimum period of residence for the Master's degree is one academic year or its equivalent, and for the Doctor's degree three years.

Not all work done by a graduate student is graduate work in the strict sense of the term. Graduate work to be considered acceptable for a degree must be of advanced character in some field or department of knowledge. No residence towards a master's degree will be granted any student who does not register with the Dean of the Graduate School within three days after the opening of the Session, and who does not formally become a candidate for this degree under the direction of a special committee. The latest day for such registration in 1926 is July 9.

Students of the University Summer Session, of the Summer School of Biology, and of the Summer School in Agriculture who have been admitted to candidacy for an advanced degree are required to pay the regular tuition of the session but are exempt from tuition and administration fees in the Graduate School. On registering for the first time as candidates, students who have not previously matriculated in Cornell University will be given matriculation without payment of the usual fee on presenting a certificate that they have paid the tuition charges for the current Summer Session.

Students registered in the Graduate School and excused from tuition in the Summer School in Agriculture as residents of New

York State are charged on the first registration in the Graduate School a matriculation fee of \$10, and for each session an administration fee of \$6.25.

The residence requirements for the degree of Master of Arts may be fulfilled in whole or in part by attendance during the Summer Session of the University. For this purpose, two Summer Sessions will be regarded as the equivalent of one term, and four Summer Sessions as the equivalent of one year. Candidates for this degree who are in residence during Summer Sessions only are also required to continue their studies during the year under the direction of the chairman of the special committee in charge of their work.

Any person wishing to become a candidate for an advanced degree and to study during the Summer Session is advised to write to the professor whose work he expects to take, and also to the Dean of the Graduate School, asking for a blank form of application for admission to the Graduate School. It is much better to make these arrangements before coming to Ithaca, thus avoiding delay and interruption of study after the Summer Session has begun. In this way, moreover, it may be possible to secure the advice and guidance of professors in fields of study of which no specific mention is made in the announcements. Not all departments formally offer graduate work. In some departments, notably in the Summer School of Biology, opportunities for research may be had for a longer period than the six weeks during which courses are formally conducted.

In certain departments also an invitation is issued to scholars who are beyond the stage of regular graduate study to make use of the resources of the University in these fields for carrying on research.

CERTIFICATES FOR WORK DONE

Students of the Summer Session who are not matriculated in the University may receive certificates of attendance and of work satisfactorily performed. Application for them must be made before August 15, and the applicant must leave at the office of the Registrar a large-sized envelope stamped and directed to his home address. The certificate will then be forwarded by mail. The regulations of each department for the granting of a certificate must be met.

GENERAL INFORMATION

CONDUCT AND SCHOLARSHIP

The Summer Session is conducted under the same general regulations concerning conduct and scholarship as apply during the academic year. For this reason students are requested to familiarize themselves with dormitory and other rules, and to abide by them. The officers of the University also reserve the right to cancel the registration of any student at any time for neglect of scholastic duties. The rules governing student conduct are:

"A student is expected to show both within and without the University unfailing respect for order, morality, personal honor, and the rights of others. The authority to administer this rule and to impose penalties for its violation is vested in the University Committee on Student Affairs. The rule is construed as applicable at all times, in all places, to all students of the University. A student may at any time be removed from the University if, in the opinion of the Committee on Student Affairs, his presence is not conducive to the University's best interests."

ADMISSION

There are no examinations for admission to the Summer Session. Each person must, however, satisfy the instructor in charge of every course he intends to take, unless it be elementary, that he is qualified to pursue the work.

There are some special requirements to be met by applicants for admission to the summer session of the Law School, and such persons should consult the separate announcement of that session.

Admission to the classrooms during the Summer Session is restricted to students duly registered for the session. A student thus duly registered may occasionally visit any class; but if he wishes to attend regularly without credit he must secure special permission from the Chairman of the Summer Session. Such permission will be granted only when the student can show a serious purpose in such attendance.

If a student entering the Summer Session wishes his work to count toward a degree, there are certain regulations that he must comply with, and he will find them set forth under the head of Academic Credit for Work, page 9.

REGISTRATION

All students of the Summer Session are required to register with the Registrar of the University. The hours and places of registration are given in the Calendar of the session, on page 3. Students may register on Saturday, July 3, between 8 A. M. and 5 P. M., or on the day of their arrival, if they reach Ithaca on July 5 or later. They

are urged to register on July 3. Registration before that day is not required, and it is not necessary to apply in advance for registration blanks.

Beginning on Tuesday, July 6, the Registrar's office in Morrill Hall will be open from 9 A. M. till 4 P. M. every week day except Saturday, when it will be closed at noon.

Students who wish to obtain credit for graduate work to be done during the Summer Session must register not only with the Registrar but also with the Dean of the Graduate School, at his office in Room 22, Morrill Hall.

Persons who are to take courses in the Summer School of Agriculture and in any department of the Summer Session of the University must register for both the Summer School and the Summer Session. They are required to pay only one tuition fee.

TUITION

The charge for tuition in the Summer Session of the University is fifty dollars. In the summer session of the Law School it is sixty-five dollars for the whole session of eleven weeks, or thirty-five dollars for either term of five and one-half weeks.

The tuition fee is payable in full, on the first registration day or within the next five days, at the office of the Treasurer, Room 1, Morrill Hall.

Any student who fails to pay his tuition charges, other fees, and other indebtedness to the University, or who, if entitled to free tuition, fails to claim it at the Treasurer's office and to pay his fees and other indebtedness, within the prescribed period of grace, is thereby dropped from the University unless the Treasurer has granted him an extension of time to complete payment. The Treasurer is permitted to grant such an extension when, in his judgment, the circumstances of a particular case warrant his doing so. For any such extension the student is assessed a fee of \$5 for the first week and \$2 additional for each subsequent week in which the whole or any part of the debt remains unpaid, but the assessment in any case is not more than \$15. The assessment may be waived in any instance for reasons satisfactory to the Comptroller and the Registrar, when such reasons are set forth in a written statement.

If a student withdraws from the Summer Session, the Treasurer may refund a part of the tuition fee or cancel a part of the obligation that the student has incurred for tuition, provided the reason for the withdrawal be stated in writing and be satisfactory to the Comptroller and the Registrar. In such a case the student is required to pay twenty-five per cent of the term's tuition for each week or fraction of a week between the first registration day and the date of his certificate of withdrawal.

Students registering at any time during the last four weeks of the Summer Session or of either term of the summer session of the Law School are required to pay for the remainder of the term at the rate of twenty-five per cent of the term's tuition for each week or fraction of a week between the date of registration and the last examination day of the term.

Any tuition fee or other fee may be changed by the Trustees to take effect at any time without previous notice.

IN THE SUMMER SCHOOL OF AGRICULTURE

Tuition in any of the courses of the Summer School of Agriculture is free to admitted students who are residents of the State of New

York and who have been residents for at least one year immediately preceding registration. An incidental fee of ten dollars is, however, charged to all students for admission. Students from outside the State of New York, whether they take one subject or more, are required to pay fifty dollars, in which is included the incidental fee.

Free tuition does not include instruction in the Summer School of Biology or any instruction outside the College of Agriculture, nor are students receiving free tuition permitted to attend classes outside the College of Agriculture.

OTHER FEES

In *Chemistry* a laboratory fee is charged for material actually consumed. A deposit of such amount as the instructor may prescribe must be made with the Treasurer.

In *Physics* a laboratory fee is charged at the rate of two dollars for each laboratory period each week. The entire amount must be paid to the Treasurer at the beginning of the session.

In *Geography and Geology*, in Course S 8 and in Course S 9 a fee of one dollar must be paid in advance to the Treasurer to cover incidental expenses of the course.

In *Drawing and Painting*, Course S 4, a fee of ten dollars is required.

Biology. A laboratory fee is charged for each course in Biology, varying with the character of the course. The amount which the student must expect to pay upon beginning any course is stated in the description of that course, under the head of Summer School of Biology, page 50.

Swimming. A special charge of ten dollars is made for the instruction in Swimming.

Shop-Work. Students not matriculated in the College of Engineering of Cornell University are required to pay a fee of \$3.50 for each credit hour of shop-work for which they register.

Library. A person who obtains the privilege of taking books from the University Library for home use is required to make a deposit of five dollars, which will be refunded upon the return of all books taken out.

A fee of two dollars is charged for the privileges of Willard Straight Hall. See page 18.

RESIDENTIAL HALLS: ROOMS: BOARD

FOR WOMEN

The University has three residential halls for women in which rooms and board may be obtained during the Summer Session by registered students only. They are:

Sage College, which accommodates 175 persons. Here the charge for room, table board, and a specified amount of laundry, for the session, is from \$72 to \$87, according to the size and location of the room.

Prudence Risley Hall, which accommodates 184 persons. Here the charge for room, table board, and a specified amount of laundry, for the session, is from \$78 to \$87, according to the size and location of the room.

Cascadilla Hall. In this building, which accommodates about 160 persons, a furnished room may be had for the session at a cost of \$23 to \$29. The charge includes a specified amount of laundry. This building has shower baths and not tubs. On the ground floor the University conducts a cafeteria restaurant where meals can be obtained at reasonable rates.

Besides these halls, there are certain *approved houses* which are occupied exclusively by women and which, like the halls, are under the direct supervision of the Dean of Women.

Undergraduate women students of Cornell and other colleges and other women students under twenty-one years of age are expected to live in the residential halls or the approved houses. Any woman student should consult the Dean of Women before engaging a room.

In Sage College and Prudence Risley Hall, the charge for room and board includes lodging Saturday night, July 3 (not earlier), breakfast Sunday, July 4, and all meals to and including breakfast Saturday, August 14.

Members of the Summer Session who lodge outside Sage College and Prudence Risley Hall may obtain table board at either of those halls for \$9 a week.

Each of the residential halls is in charge of a warden, who is glad to know the students, to advise them in illness or other emergency, and to give them whatever information they wish about the University or the town. It is understood that persons living in the halls will conform to the house regulations made for the convenience and comfort of all.

Application for rooms in any of the residential halls or approved houses for women should be made to the Manager of Residential Halls, Sage College, Ithaca, N. Y. Information about such rooms may be obtained from the Manager in advance of the application. The list of approved houses will be available after June 1st on application to the Manager, and also, if desired, a supplementary list of private houses with desirable rooms available for mature women who prefer to live outside any of the halls or approved houses. Checks should be drawn to the order of Cornell University.

A deposit of five dollars must accompany each application for a room in any of the three residential halls; otherwise the application will not be entertained. The rooms are reserved in the order of application. If a room assigned is occupied by the applicant, the amount of the deposit is held until the end of the session to cover the return of keys and any damage to building or furniture other than ordinary wear and tear, and to insure the completion of the lease.

The deposit will be refunded if the applicant gives formal notice to the Manager on or before June 15 that she wishes to withdraw her application.

FOR MEN

Men attending the Summer Session can obtain comfortable and attractive rooms in the new Residential Halls for Men, which are west of the main quadrangle, conveniently near to the other University buildings. These halls are thoroughly modern and of fireproof construction.

Application for rooms in the Residential Halls for Men, or for plans of the rooms or other information about them, should be made to the University Comptroller, Morrill Hall, Ithaca, N. Y. Checks should be drawn to the order of Cornell University.

The charge for furnished room, including care of the room and laundry of bed linen, is \$21 for the session. There are a few suites at a higher rate, and some rooms on the top floor may be had for less.

Board may be obtained for an average of \$1 to \$1.50 a day in Willard Straight Hall near the residential halls, or in other dining rooms or restaurants on or near the campus.

A list of private houses offering desirable rooms for rent for the session can be obtained after June 1st by application to the Manager of Residential Halls, Sage College, Ithaca, N. Y.

THE COST OF LIVING

An estimate of the cost of living in Ithaca in the summer can be made by consulting the figures given above. In a private house a student may be able to rent a room at a little less cost for the session than in one of the residential halls. Rooms are rented with the understanding that they will be occupied for the entire session unless both parties agree otherwise. Table board is generally engaged by the week.

MEANS OF SELF-SUPPORT

Students, either men or women, who wish to earn a part of their expenses during the session are invited to correspond in advance with the Manager of Residential Halls, Sage College, Ithaca.

THE STUDENT'S HEALTH

MEDICAL ADVICE

The University's staff includes a medical adviser of men and a medical adviser of women, and each of them has a corps of assistants. The medical advisers observe regular office hours, from 10 A. M. till 12 M. daily, at their respective offices in the Gymnasium for men and in Sage College for women. No charge is made for their services.

In cases of illness or indisposition which involve absence from classes even for one day, students are expected to report immediately either in person, by telephone, or by messenger to the medical ad-

viser's office. For the convenience of the adviser such illness should be reported early in the day. Students indisposed but still able to attend classes should consult the medical adviser immediately in order that advice may be given and that diagnosis of incipient diseases may be made promptly. Any student failing to report as soon as possible to the medical adviser any contagious or infectious disease will be regarded as guilty of a serious breach of discipline.

A medical examination is not required of students in the Summer Session, but any student may have such an examination without charge by applying to the medical examiner.

A student may at any time be requested to withdraw from the University if, in the opinion of the University authorities, the condition of his health is such as to make it unwise for him to remain.

THE UNIVERSITY INFIRMARY

The University Infirmary occupies three large buildings near the campus. The first of these, a brownstone structure, was the home of Henry Williams Sage, for many years chairman of the Board of Trustees of the University. After his death in 1897, his sons, Dean and William Henry Sage, endowed it and gave it to the University for a student's infirmary as a memorial of their father. The second building, the Schuyler House, was purchased in 1911; in 1912 the Trustees erected a third building, fireproof, and this is the present main hospital building. The normal capacity of the Infirmary is seventy-five beds; the number can be doubled in an emergency.

The Infirmary, which is in charge of an experienced superintendent and is thoroughly equipped, provides suitable rooms, food, and nursing for sick students. It has no medical staff; students find their own physicians among practitioners in Ithaca or elsewhere.

Students in the Summer Session have all the privileges of admission to the Infirmary. They pay no fee in advance, but are liable to regular charges for services rendered.

THE LIBRARIES

The University Library is open on week days from 8 A. M. till 10:30 P. M. In this building are the main library, containing about 500,000 volumes, and most of the seminary and special libraries. The main reading room affords accommodations for more than two hundred readers, and contains a selected library of about 8,000 volumes of reference works. Below stairs is the periodical room in which are kept the current numbers of about 500 journals in various fields of knowledge. These rooms are open to all students. Students properly qualified are allowed the use of the seminary rooms and the books in them. The main collection is primarily a library of reference for use in the building. Students are, however, to a limited extent, allowed to take out books for home use. Persons wishing this privilege must make a deposit of \$5, which will be refunded upon the return of all books taken out.

The library of the Law School numbers more than 56,000 volumes and about 5,800 pamphlets, to which generous additions are made yearly. It includes the library of the late Nathaniel C. Moak of Albany, N. Y., which was presented in 1893 by Mrs. A. M. Boardman and Mrs. Ellen D. Williams, as a memorial to Judge Douglas Boardman, the first dean of the School. In reports of the federal courts, and of the several American state jurisdictions, and in English, Scotch, Irish, Canadian, Australian, and English colonial reports, the law library is practically complete to date.

The Library of the College of Agriculture, in the basement of Stone Hall, is open on week days from 9 A. M. till 5 P. M., except Saturday, when it is closed at 1 P. M. In it will be found a large collection of bulletins and reports of experiment stations, reference books on agriculture and country life, agricultural periodicals, and the like. The entomological library, in the department of entomology on the fourth floor of Roberts Hall, is one of the most complete of its kind in the United States. Nearly all of the departments in which instruction is given have well-selected departmental libraries.

WILLARD STRAIGHT HALL

All privileges of Willard Straight Hall, the social center of the University, are open to Summer Session students, both men and women, as during the regular college year. In accordance with the regular procedure, a fee of \$2 is required of all summer registrants, payable at the time of the regular tuition fee.

SAGE CHAPEL

Religious services are conducted in Sage Chapel throughout the academic year by clergymen of various religious denominations. There will be services in the Chapel on five Sundays during the Summer Session, July 11 to August 8 inclusive.

LECTURES: MUSICAL RECITALS: EXCURSIONS

In addition to the regular classroom work there will be general public lectures on Monday evenings, and also lectures of general interest each week in connection with the work of various departments. They will be all announced in the Weekly Calendar.

Organ recitals will be given on Tuesday evenings in Sage Chapel and on Sunday evenings in Bailey Hall. A piano lecture-recital will be given each week.

Two concerts by distinguished artists will be given in the course of the session; see the Calendar on page 3. Students can buy tickets for these concerts at reduced rates.

Wednesday evenings are devoted to the departmental conferences, which are open to all interested persons. Notice of these conferences will be given from week to week.

Excursions, in connection with the work of certain departments, are made to many points of interest. Some of them are open to all members of the Summer Session. Especially noteworthy are the excursions to Watkins Glen and to Niagara Falls.

RAILROAD ROUTES TO ITHACA

Ithaca can be reached from New York City by either the Delaware, Lackawanna & Western or the Lehigh Valley Railroad. On both roads there are good trains, with Pullman cars, both night and day. Passengers from the west reach Ithaca by way of the Lehigh Valley Railroad from Buffalo. From stations on the Boston & Albany Railroad, the shortest route to Ithaca is by way of Syracuse and Auburn. From Philadelphia, and from Baltimore, Washington, and the south by way of the Baltimore & Ohio, the Philadelphia & Reading connects with the Lehigh Valley at Bethlehem. From stations on the Erie, connection with Ithaca can be made either by the Lackawanna at Owego or by the Lehigh Valley (Elmira and Cortland branch) at Elmira. Ithaca has connections with the New York Central at Geneva, Auburn, and Canastota.

COURSES OF INSTRUCTION

In this list the names of the departments of instruction are in alphabetical order. There is an index on page 73.

Most of the courses consist of five exercises a week, or one hour each week day except Saturday. The number of actual hours of class work in any course can be found by multiplying the number of weekly exercises by six.

The word *hour* when used with reference to University credit means the equivalent of one class exercise a week for a half-year or one semester. One hundred and twenty such hours are required of candidates for the A.B. degree.

GS signifies *Goldwin Smith Hall*.

ASTRONOMY

S 1. General Astronomy. Credit two or three hours. Lectures and recitations, daily, 8. *Lincoln* 39. Laboratory, T or Th, 2 to 4, *Lincoln* 36, and observations at the *Observatory* at least one clear night each week from 7:30 till 9:30. Professor BOOTHROYD.

A general introductory course intended especially for teachers who may wish to prepare more thoroughly for teaching general science or geography. The lectures are illustrated by models and by lantern slides and the 12-inch equatorial and other instruments of the *Observatory* are used for observation and instruction. Tancock's *Elements of Descriptive Astronomy* and Young's *Elements of Astronomy* are used for reference.

CHEMISTRY

The courses announced below correspond entirely or in part with courses given during the regular sessions of the University. For regular students the requirements for admission to the various courses will be the same as during the year.

Teachers may be admitted to any course for which their general training or experience may be considered to prepare them. Every effort will be made to meet the individual needs of teachers by arranging and modifying the work as far as possible so as to fulfill the particular requirements in each case.

All courses in Chemistry are given in the *Baker Laboratory of Chemistry*.

S 101. Introductory Inorganic Chemistry. Credit for a, b, and c, six hours.

(a) Lectures, daily except Sat., 12. *Main Lecture Room*. Professor BROWNE and Mr. HUGHES. The lectures deal with the fundamental theories and laws of chemistry, and with the more common elements and their compounds. They are profusely illustrated by experiments. The course is primarily designed to meet the needs of teachers in secondary schools, and to that end emphasis is laid upon methods of lecture presentation and experimental demonstration. Students other than teachers must, before registering, satisfy the department that they are properly prepared to carry on the work.

(b) Laboratory work, M W, 8-12, and T Th F, 9-12. *Room* 150. Dr. MCKINNEY and Mr. BATEMAN. A series of experiments designed to illustrate the fundamental laws of chemistry and to acquaint the student with the properties of the principal elements and their compounds. For the benefit of teachers who may take the course special attention will be given to the methods of laboratory instruction, quantitative experiments, and the blowing of simple glass apparatus.

(c) Recitations. T Th F, 8. *Room* 22. Dr. MCKINNEY. The recitations deal with the subject matter of the lectures and with the experimental work in the laboratory and afford thorough drill in the solution of chemical problems.

S 205. Introductory Qualitative Analysis. Lectures, recitations, and laboratory practice. Credit six hours. Lectures and recitations, daily except S, 8, M T Th, 11. *Room 107.* Dr. COREY. Laboratory, daily except S, 2-4:30, and M W, 9-12. *Room 50.* Dr. COREY and Mr. HUNTER.

The properties and reactions of the common elements, and of the common inorganic and organic acids; the qualitative analysis of a number of solutions and solid compounds.

S 210. Introductory Qualitative Analysis. Shorter course. Lectures and laboratory practice. Credit three hours. Lectures, M W F, 11. *Room 107.* Dr. COREY. Laboratory, daily except S, 2-4:30. *Room 50.* Dr. COREY and Mr. HUNTER.

The properties and reactions of the common elements and acids, and their detection in various liquid and solid mixtures.

S 220. Introductory Quantitative Analysis. Lectures, recitations, and laboratory practice. Credit six hours. Lectures and recitations, daily except S, 8. *Room 207.* Assistant Professor NICHOLS. Laboratory, daily except S, 9-1. *Room 294.* Assistant Professor NICHOLS and Mr. TUCKER.

The preparation and standardization of various volumetric solutions, and their use in analyzing a variety of substances; gravimetric methods, stoichiometry.

S 225. Introductory Quantitative Analysis. Shorter course. Lectures and laboratory practice. Credit three hours. Lectures, T Th, 11. *Room 207.* Assistant Professor NICHOLS. Laboratory, daily except S, 8-11. *Room 294.* Assistant Professor NICHOLS and Mr. TUCKER.

The preparation and use of volumetric solutions and work in elementary gravimetric analysis.

S 230. Advanced Quantitative Analysis. Recitations and laboratory practice. Credit two to four hours. Laboratory, daily except S, 8-1. *Room 294.* Assistant Professor NICHOLS and Mr. TUCKER.

Gravimetric, volumetric, and electrolytic methods of analysis, and methods of combustion analysis; the calibration of weights and volumetric apparatus, analysis of iron and steel, alloys, silicates, etc.

S 305. Introductory Organic Chemistry.

A. Aliphatic Compounds. Credit three hours. Lectures and written reviews. Daily, 8. *Room 207.* Dr. CORNWELL and Mr. BEACH.

B. Aromatic Compounds. Credit three hours. Lectures and written reviews. Daily 9. *Room 202.* Open to those who have had or who are taking S 305 A. Mr. LACEY and Mr. BEACH.

The lectures discuss systematically the more important compounds of carbon, their occurrence, methods of preparation, reactions, relations, and uses.

S 310. Introductory Organic Chemistry.

A. Aliphatic Compounds. Credit one to three hours. Laboratory practice and oral reviews. Open to those who have had or are taking S 305 A. Hours to be arranged. Mr. LACEY and Mr. BEACH.

B. Aromatic Compounds. Credit one to three hours. Laboratory practice and oral reviews. Open to those who have had or are taking S 305 B and S 310 A. Hours to be arranged. Mr. LACEY and Mr. BEACH.

The student prepares a large number of typical compounds of carbon, and familiarizes himself with their properties, reactions, and relations. It is recommended that S 305 A and S 310 A be taken in one summer, and that S 305 B and S 310 B be taken in the following summer. In exceptional cases S 305 A and S 310 A, and S 305 B but not 310 B may be taken together by special permission.

S 320. Advanced Organic Chemistry. Credit two or more hours. Laboratory practice at hours to be arranged. Dr. CORNWELL and Mr. LACEY.

The course in the preparation of organic compounds is here continued, the preparations, however, being more difficult, and requiring more skill and experience on the part of the student.

S 330. The Coal Tar Dyestuffs. Credit two to four hours. Laboratory practice. Hours to be arranged. Dr. CORNWELL and Mr. LACEY.

Various intermediate products used in the preparation of dyes are made and from these, representatives of the different groups of dyestuffs are prepared and studied.

S 375. Introductory Organic Chemistry. SHORTER COURSE. Aliphatic compounds. Lectures and recitations. Daily, 8. *Room 207.* Dr. CORNWELL and Mr. BEACH. Aromatic compounds. Lectures and recitations. Daily, 10. *Room 202,* during the first half of the session only. Mr. LACEY and Mr. BEACH.

Required of students in the College of Home Economics. Credit four hours for lectures and recitations.

Laboratory practice at hours to be arranged. Credit one or two hours. Mr. LACEY and Mr. BEACH.

This course is primarily designed for students preparing for the study of medicine, who are required to take the whole six hours.

S 405. Introductory Physical Chemistry.

A. Credit three hours. Lectures, daily except Sat., 8, and two other lectures at hours to be arranged. *Room 7.* Professor BRIGGS. A systematic presentation of modern chemical theory. The subject matter includes: atomic and molecular theory; gases, liquids, and solids; the theory of solution; colloid chemistry and adsorption; reaction velocity, catalysis, and equilibrium in homogeneous systems.

B. Credit three hours. Lectures, daily except Sat., 9, and two other lectures at hours to be arranged. *Room 7.* Professor BRIGGS and Mr. KELLER. A continuation of Part A. The subject matter includes the phase rule and its applications; thermochemistry; electrochemistry; photochemistry; application of the principles of physical chemistry to actual practice.

S 410. Physical Chemistry Laboratory. A. Credit three hours. Laboratory practice, daily except Sat., 8-1. *Room 1.* Professor BRIGGS and Mr. LARSON. Open only to those who have taken or are taking Course S 405 A or its equivalent. With the data obtained in the laboratory as a basis, detailed reports are written covering each of the following topics: molecular weight determination by vapor density, boiling point and freezing point methods; vapor pressure; viscosity; distillation of liquid mixtures.

B. Credit three hours. Laboratory practice, daily except Sat., 8-1. *Room 1.* Professor BRIGGS and Mr. LARSON. Open to those only who have taken or are taking Course S 405 B or its equivalent. The course is a continuation of Part A. The following topics are considered: dissociation; solubility; reactions; reaction velocity and catalysis; indicators; thermochemistry; diffusion; colloids and adsorption; photochemical reactions; phase rule studies of inversion points: solid-liquid, liquid-liquid, compounds.

S 465. Laboratory Practice in Physical Chemistry. Credit one to three hours. Laboratory periods to be arranged. Professor BRIGGS and Mr. LARSON.

This course is designed to afford opportunity for special laboratory practice in physical chemistry, colloid chemistry, or electrochemistry.

S 195, S 295, S 395, S 495, S 595. Research. Credit one to six hours. Senior chemists, and others by special permission, may elect research in the fields of Inorganic, Analytical, Organic, or Physical Chemistry, or Chemical Microscopy, under the direction of some member of the staff of instruction.

S 180. Teachers' Course in Chemistry. Daily except Sat., 10. *Room 22.* Credit two hours. Dr. MCKINNEY. Lectures, discussions, and conferences concerning the teaching of chemistry in the secondary schools.

S 530. Introductory Chemical Microscopy. Lectures and laboratory practice. Credit three hours. Three lectures and five 2½ hour laboratory periods a week. Hours to be arranged. *Room 378.* Dr. MASON.

The use of the microscope and its accessories; microscopic methods as applied to chemical investigations; micrometry; the examination of crystalline compounds; recognition of textile and paper fibers, etc. The application of microscopic methods to quantitative analysis.

S 535. Advanced Chemical Microscopy. Laboratory practice. Credit three hours. Prerequisite course S 530. Laboratory periods and conference hours to be arranged. *Room 378.* Dr. MASON.

Practice in the examination and analysis of inorganic substances containing the more common elements, with special reference to rapid qualitative methods and to the analysis of minute amounts of material.

Students not desiring University credit, who wish to secure a working knowledge of Chemical Microscopy in the shortest possible time, may arrange with the instructor to cover the parts of both of the above courses which best meet their needs.

DRAWING AND PAINTING

S 1. Color From Still Life. Daily except Sat., 8-10. *Franklin.* Assistant Professor STONE.

Instruction will be given in one or more of the following media: oil, water color, pastel.

S 2. Outdoor Sketching. Daily except Sat., 2-4. *Franklin.* Assistant Professor STONE.

Sketching from nature in oil or in watercolor. Only those who submit original work in one of these media will be admitted to this class.

S 3. Drawing From Antique. Daily except Sat., 2-4. *Franklin.* Professor ADAMS.

Instruction will be given in charcoal drawing from casts.

S 4. Drawing From Life. Daily except Sat., 10-12. *Franklin.* Professor ADAMS.

Instruction will be given in charcoal drawing from the human figure. A fee of ten dollars will be charged for this course.

ECONOMICS

The following courses are designed to meet the needs of three classes of students in the Summer Session: (1) those desiring regular college credit for general economics; (2) students with special interests in economic subjects; (3) students seeking broad preparation for the teaching of economics in secondary schools. For the first group, Course S 1 covers the subject matter usually included under elementary economics. For Cornell students Course S 1 satisfies the economics requirement in the College of Engineering and will also serve in lieu of Course 1 as a prerequisite for admission to various advanced courses in Economics. Graduate students wishing to pursue special investigations will be afforded assistance by members of the Summer Session staff of instruction and by other members of the Department of Economics of the University who may be in residence in Ithaca during the summer.

S 1. Modern Economic Society. Credit four hours. Twice daily except Sat., 11 and 12. *GS 142.* Messrs. O'LEARY, DOLBEARE, and HUDGINS.

A survey of the existing economic order, its more salient and basic characteristics, and its operation.

S 2. General Sociology. Credit two hours. Daily except Sat., 11. *GS 124.* Acting Professor MELVIN.

The aims of the course are two; first, to study the structure and function of society; and second, to give an appreciation of processes and forces which may be directed to wholesome societal development. The social structure, activities, influences, controls, and changes as exemplified in both urban and rural life constitute the subject matter of this study.

S 4. Industrial History. Credit two hours. Daily except Sat., 9. *GS 124.* Associate Professor USHER.

The forms of industrial organization will be studied and the general course of industrial development will be sketched. The primary emphasis, however, will be upon the Industrial Revolution in Europe and the United States as well as in England.

S 6. The History of Commercial Policy. Credit two hours. Daily except Sat., 11. *GS 190.* Associate Professor USHER.

A study of national and imperial problems of commercial policy under the following topics: the rise of the border customs system in France and in Prussia; the history of the German Customs Union; the Free Trade movement in Great Britain; the protective movement in the United States; the return to protection in France and in Germany; imperial preference and the British Empire; recent problems in commercial policy.

S 7. Public Finance. Credit two hours. Daily except Sat., 8. *GS 245.* Assistant Professor CAVERLY.

A study of governmental expenditures, revenues, and debts: with special emphasis upon the apportionment, incidence, and economic effects of taxation, and the character and desirability of the more important taxes levied in this country.

S 8. Railway Economics. Credit two hours. Daily except Sat., 10. *GS 227.* Assistant Professor CAVERLY.

An analysis of the economic character of the railway industry and a study of the public relationships and of the government regulation of railways in the United States.

S 13. Corporation and Investment Finance. Credit two hours. Daily except Sat., 10. *GS 264.* Professor REED.

A study of the financial problems of the business corporation from the points of view of the management and of the investor.

S 15. The Business Cycle. Credit two hours. Daily except Sat., 9. *GS 264.* Professor REED.

Crises and depressions: their economic significance and methods of forecasting.

EDUCATION

Courses S 1, S 2, S 3, and S 4, will be found especially helpful to college graduates who are preparing for examinations in professional subjects as outlined in the New York State Syllabus and Course of Study for the renewal of the College Graduate Certificate Limited. The State Department of Education will hold an official examination for such candidates at Ithaca on August 20 and 21.

► Under certain conditions teachers may waive the state examination by completing an approved course of study in the Summer Session. Information regarding details of such a course may be had by consulting Professor R. H. JORDAN, Goldwin Smith Hall 252, either in person or by letter.

S 1. Educational Psychology. Credit two hours. Daily except Sat., 12. *GS 256.* Mr. GILBERT.

A study of the learning process and its application to educational theory and practice; the original nature of man, reflex action and instinct; the acquisition of habits; attention, memory, association, and thinking; fatigue, individual differences, and social co-operation.

S 2. Principles of Education. Credit two hours. Daily except Sat., 9. *GS 256.* Professor RUEDIGER.

A study of education from the sociological standpoint: infancy, heredity, and eugenics; the problem of aim; formal discipline; social and personal objectives; the curriculum; the studies and their functions. Texts: Ruediger, *Principles of Education*; Peters, *Foundations of Educational Sociology*.

S 3. History of Education. Credit two hours. Lectures, recitations, and prescribed readings. Daily except Sat., 11. *GS 256.* Professor WAKEMAN.

The purpose of this course is to give an understanding of present educational values and practices through an historical consideration of their origin and development.

The topics treated are to a great extent those emphasized in the syllabus for the New York State Teachers' Certificate; education in primitive and barbaric societies; the rise of the school as an institution; Greek and Roman education; scholasticism, humanism, and realism; the 'psychological' movement; the origin and nature of specifically modern tendencies in education.

S 4. Secondary School Methods. Credit two hours. Daily except Sat., 10. *GS 256.* Professor RUEDIGER.

A study of the principles underlying vital instruction in its intellectual, emotional, and motor phases: the use of supplementary devices; the project; motivation; types of subject matter; lesson assignment; questioning; the art of study; supervised study; tests and examinations; lesson planning; class management.

The course is planned to meet the New York State Certificate requirement in general method, and is adapted especially to the needs of younger and relatively less experienced teachers. Texts: Parker, *Methods of Teaching in High School*; Ruediger, *Vitalized Teaching*.

S 5. High School Administration. Credit two hours. Daily except Sat., 8. GS 256. Professor JORDAN.

A study of the principles basic to administration of the senior and junior high school; the course of study; principles of election; classification of pupils; use of intelligence and achievement tests; the principal as supervisor; building problems; selection and rating of teachers; schedule-making; problems growing out of the experience of the class. Johnson's *Administration and Supervision of the High School* will be used as a basis for discussion.

S 6. Classroom Tests and Measurements. Credit two hours. Daily except Sat., 10. GS 160. Mr. GILBERT.

Use of educational measurements and standard scales in the solution of typical educational problems; class and individual diagnosis in the light of achievement-tests; remedial measures following such diagnosis.

Textbook: Monroe, *Measuring the Results of Teaching*.

S 7. Mental Measurements. Credit three hours. Lectures, prescribed readings, and laboratory. Daily except Sat., 9. GS 242. Laboratory, hours to be determined. GS 248. Mr. FREEMAN.

The first half of this course furnishes a general introduction to the psychology and practice of mental tests. The lectures deal with the historical development of tests; the principles underlying their formation and application; the single tests and the test systems; a detailed study of the principles and use of the Stanford Revision of the Binet-Simon Scale; a brief consideration of the measures of central tendency, variability, and correlation; the bearing of tests upon the problems of psychological theory (nature and distribution of intelligence, the correlation of abilities, etc.). The laboratory work is intended to give practice in administering tests, both to individuals and to groups.

The second half of the course will consider the use of the tests in schools for the diagnosis of defective and exceptional abilities; the causes, frequency, and consequences of mental deficiency; the social and educational treatment of defective, delinquent, retarded, superior, and psychopathic children.

S 8. Foundations of Method. Credit two hours. Daily except Sat., 12. GS 242. Professor MOORE.

This course is designed primarily for experienced elementary and high school teachers and supervisors. It will include a critical examination of current and proposed educational methods in the light of accepted principles of educational psychology. Special attention will be given to the theories involved in project-teaching. The course will include such topics as the laws of learning, interest and effort, the thinking process, the organization of experience, the relationship between subject matter and the educative process, discipline and moral training.

S 9. Advanced Work in Education. Hours and credits to be arranged. GS 248. Professor JORDAN and the other members of the staff.

As a prerequisite for this course one of the courses S 2, S 3, or S 7, or an equivalent, is necessary. The work may consist either of essays and reports upon some special topic, or of laboratory practice of an advanced grade. A seminary will be held if application is made by a sufficient number of advanced students.

S 10. Problems in School Administration. Credit two hours. M W, 2-4:30. GS 236. Professor JORDAN.

A study of administration of school systems, together with problems peculiar to the administration of secondary schools. The course follows a four-year cycle of material, especially arranged to give graduate students a continuous four-year course. Students may enroll in any unit of this course, and particular attention

is paid to the needs of each group. Open, by permission of the instructor, to graduate students and to teachers of experience. Papers and reports required.

S 14. *The Junior High School*. Credit two hours. Daily except Sat., 9. GS 227. Dr. BENTLEY.

A study of the organization, underlying principles, administration and method of the Junior High School as an institution. Planned for teachers and administrators who are interested in this educational development.

S 15. *Educational Statistics*. Credit one hour. M W F, 12. GS 160. Mr. FREEMAN.

An elementary course in statistics applied to educational problems. Graduate students in Education are expected to elect this course.

S 16. *The Modern Theory of Education*. Credit two hours. Daily except Sat., 10. GS 134. Professor WAKEMAN.

A critical examination of the theories underlying the newer types of schools and recent movements in educational thought. Emphasis will be placed upon the psychological and sociological foundations of education. Readings and discussions.

S 18. *School Supervision*. Credit two hours. Daily except Sat., 11. GS 134. Dr. BENTLEY.

Principles and applications of supervision of city and town school systems, involving problems of evaluation and improvement of teaching, and of subject matter. Open to both supervisory officers and teachers. The course will attempt to meet the particular needs of the class.

S 123. *Teaching the Elementary School Subjects*. Credit two hours. Daily except Sat., 2. *Caldwell* 143. Dr. EARHART.

A course for experienced teachers and supervisors. Attention will be given to recent studies and research in arithmetic, handwriting, drawing, practical arts, hygiene, physical education, spelling, English. Emphasis on the various topics will depend upon the interest and needs of the class. The instructor reserves the right to limit registration in this course.

TEACHERS' COURSES IN HIGH SCHOOL SUBJECTS

The following courses are offered for teachers desiring to study problems of instruction in different high school subjects. The courses are planned also to meet the requirements of the New York State Department of Education in the issuance of the College Graduate Life Certificate.

TEACHERS' COURSE IN CHEMISTRY. See Chemistry S 180.

TEACHERS' COURSE IN ENGLISH. See English S 5.

TEACHERS' COURSE IN HISTORY. See History S 16, S 17.

TEACHERS' COURSE IN LATIN. See Latin S 1.

TEACHERS' COURSE IN MATHEMATICS. See Mathematics S 20.

TEACHERS' COURSE IN MUSIC. See Music S 20, S 21.

TEACHERS' COURSE IN PHYSICS. See Physics S 90.

TEACHERS' COURSE IN PUBLIC SPEAKING. See Public Speaking S 3, S 9.

TEACHERS' COURSE IN ROMANCE LANGUAGES. See French S 30, and Spanish S 30.

PHYSICAL EDUCATION

Attention is called to the courses in Physical and Health Education on p. 39-41 of this announcement.

RURAL EDUCATION

The attention of teachers is called to the courses in Rural Education under the head of Summer School of Agriculture.

TRAINING COURSE FOR PSYCHOLOGICAL EXAMINERS

By recent legislative enactment of the State of New York, special classes for defective children must be formed whenever ten or more such cases are found in any school district. A similar law is operative in New Jersey, and like requirements are being made in other states. Not only is there a considerable conse-

quent demand for teachers trained in the examination and instruction of defectives, but with the increasing recognition of the extent and importance of individual differences in endowment, there is increasing recognition of the usefulness of familiarity with the methods and interpretation of psychological examinations, not only for the mentally backward and subnormal, but also for the normal and supernormal, and in other fields than that of education.

To assist in meeting these various needs, the departments of Education and Psychology call special attention to courses in Introductory, Experimental, and Educational Psychology, and to the course in Mental Measurements. The latter has been expanded to give a thorough training in administration of tests, and in the evaluation and application of results. Students who wish to enter this course with a view to educational and field service, are advised to register for such additional courses in psychology as may be helpful in providing an adequate understanding of psychological principles and methods of investigation. Advice in the selection of courses with regard to the individual needs of the student may be had by consulting Professor R. M. OGDEN, Goldwin Smith Hall 246, either in person or by letter.

ENGINEERING

The courses in engineering described below are equal in character to corresponding courses given in the College of Engineering during the regular session. They will be accepted for credit towards graduation by the several schools of the college so far as they apply to the prescribed work of the school concerned. Students in the College of Engineering who may desire to offer work done in the Summer Session toward graduation should consult the Director of the school in which they are regularly registered before registering in the Summer Session. Others may obtain information concerning these courses by applying to the Secretary of the College of Engineering.

DRAWING

S 3. Elementary Engineering Drawing for Secondary Schools. M T W Th F, 8-11, 9-12, and M T Th F, 2-5. *East Sibley 207.* Professor TOWNSEND.

This course is designed for those who wish to teach mechanical drawing in secondary schools and for those who feel the need of a more complete knowledge of this subject to assist them in teaching shop work. Some of the topics covered are use of instruments, lettering, orthographic and isometric projection, inking, tracing, conventions, and working drawings. Students familiar with these topics may elect a more advanced course.

Students must be provided with a set of drawing instruments, an architect's scale, a $30^\circ \times 60^\circ$, and a 45° triangle.

S 123. Engineering Drawing. M T W Th F, 8-11, 9-12, and M T Th F, 2-5. *East Sibley 207.* Professor TOWNSEND.

A course in drawing for beginners, covering use of instruments, orthographic and isometric projection, inking, tracing, conventions, working drawings. The content of this course is equivalent to that of Drawing 123 and of Drawing 125 of the regular term.

DESCRIPTIVE GEOMETRY

S 10. Descriptive Geometry. Lectures, daily except Sat., 9. Recitations and drawing, daily except Sat., 10-12, and 2-5. *Lincoln.* Assistant Professor POND.

A study of the representation of lines, planes, surfaces, and solids, and their interrelations. Warped surfaces, tangencies, intersections, and perspective. The work is the same as that given in the regular C.E. courses 201 and 202; and the student will receive four hours of credit if he takes the whole course. A three-hour course that does not include perspective, and fulfills the requirements of course 124 of the Sibley School of Mechanical Engineering and the School of Electrical Engineering will also be given from 2 to 5 P.M. The morning and afternoon sessions make it possible to readjust the schedule so as to accommodate nearly all who may wish to take either course. Those who take course 124 may do their work in the 9-12 period.

KINEMATICS

S 313. Kinematics. Credit three hours. Must be taken with course S 314 and is the equivalent of course 313. Prerequisite courses Physics 6, 334, 311, and 124. Eight recitations a week on the theory of mechanisms, instant centers, cams, gears, linkages, velocity and acceleration diagrams. Daily except Sat., 9, and M W F, 12. *East Sibley* 103. Professor ROGERS.

S 314. Kinematic Drawing. Credit two hours. Must be taken with course S 313 and is the equivalent of course 314. Prerequisite courses Physics 6, 334, 311, and 124. Drawing board application of the theory and principles of course S 313 in the construction of cams and gears, the solution of linkage and instant center problems, and the determination of velocity and acceleration diagrams, etc. Any five of the following three-hour drawing periods: T Th, 10-1, M T W Th F, 2-5. *East Sibley* 103. Professor ROGERS.

MECHANICS OF ENGINEERING

The following courses in Mechanics of Engineering are open to students from other universities, subject to the same requirements for admission as are made for Cornell students. See the Announcement of the College of Engineering for more detailed description of Courses 220, 221, 223, 334, and 336. Professors RETTGER and GARRETT and Assistant Professors PERKINS and HOWELL. Office, *Lincoln* 33C.

S 20. Mechanics. Credit five hours. Equivalent to C.E. 220. Recitations, daily, 8 and 11; and two computing periods a week.

S 21. Mechanics. Mechanics of Materials. One section. Credit five hours. Equivalent to C.E. 221. Prerequisite course 220 or the equivalent. Recitations, daily, 9 and 12; and two computing periods a week. See S 21A.

S 21 A. Mechanics Laboratory. Equivalent to C.E. 221 A. Must be taken with S 21. Hours to be arranged.

S 23. Engineering Problems. Credit two hours. Equivalent to C.E. 223. Five computing periods a week. Will be given only if enough students register for the course.

S 34. Mechanics. Credit six hours. One section. Twelve recitations a week and three computing periods. Equivalent to Sibley 334. Recitations, daily, 8 and 11. Computing periods to be arranged.

S 36. Mechanics of Materials. Credit five hours. Two sections. Eleven recitations and two computing periods a week. Equivalent to Sibley 336. Prerequisite course 220 or 334, or the equivalent. Recitations: Section A, daily, 8 and 10. Section B, daily, 9 and 12. Computations to be arranged.

HYDRAULICS

240. Hydraulics. Credit four hours. Prerequisite courses 220, 221, or 334, 336. Five recitations and three computing periods a week. Ten demonstration lectures are given in periods to be arranged. Daily except Sat., 10; M W F, 2-4:30. The Schools of Mechanical and Electrical Engineering will accept this course for 335. Professor SCHODER.

Hydrostatics, including stability of gravity dams, immersion and flotation, gas volumes and pressures; flow of liquids through orifices, nozzles, Venturi meters, pipes, and over weirs; time required to fill and empty tanks and canal locks; simple, compound, branching, and looping pipes; elementary power calculations in common pumping and fire protection problems. Flow of water in open channels. Elementary consideration of modern water wheels.

STRUCTURAL ENGINEERING

C. E. 270. Structural Design and Bridge Stresses. Credit four hours. Lectures, recitations, computations, and drawings at hours to be assigned. *Lincoln* 14 and 29. Prerequisite C.E. 220, 221. Assistant Professor BURROWS.

One-fourth of the course includes structural details, i.e., the design of a wooden roof truss and other timber joints. The remainder of the course includes dead load, live load, and impact stresses in simple bridge trusses due to uniform live panel loads, locomotive axle loads, and highway loads.

C. E. 271. **Structural Design.** Credit three hours. Lectures, computations, and drawing. Daily, at hours to be assigned. *Lincoln 14.* Prerequisite C.E. 270. Assistant Professor BURROWS.

An elementary course in steel design. Complete design, detail drawing, bill of material, and estimate of weight of a steel roof truss, a through and a deck-plate girder bridge.

C. E. 274. **Bridge Design.** Credit three hours. Computation and drawing, daily, at hours to be arranged. Prerequisite C.E. 271. Assistant Professor BURROWS.

Computations and drawing for the complete design of a railroad or highway bridge of six or seven panels, the stresses for which were computed in connection with the previous study of bridge stresses. The computations to determine the sections of all members and of pins, pin plates, splices, and other details as well as of connecting rivets are to be written up in systematically arranged reports. The drawing consists of general plans showing the location of all rivets as well as the composition and relation of all members and connections. The final reports are to give a full list of shapes and plates, and a classified analysis of weight for the span.

C. E. 280. **Concrete Construction.** Credit three hours. Daily, at hours to be arranged. Prerequisite courses C. E. 220, 221, 225, and 226. Professor URQUHART.

Concrete materials, properties of plain concrete, its making and deposition; elementary theory of reinforced concrete as applied to columns, rectangular beams, and slabs; T-beams reinforced for compression; direct stress combined with flexure.

C. E. 281. **Masonry and Foundations.** Credit three hours. Daily except Sat., 8. Prerequisite courses 220 and 221. Piles and pile driving, including timber, concrete, tubular, and sheet piles; cofferdams; box and open caissons; pneumatic caissons for bridges and buildings, caisson sinking, and physiological effects of compressed air; pier foundations in open wells; freezing process; hydraulic caissons; ordinary bridge piers; cylinders and pivot piers; bridge abutments; spread footings for building foundations; underpinning buildings; subterranean explorations; unit loads. Textbook: Jacoby and Davis's *Foundations of Bridges and Buildings*. Recitations, collateral reading in engineering periodicals, and illustrated reports. Professor URQUHART.

C. E. 282. **Reinforced Concrete Building Design.** Credit three hours. Daily, at hours to be arranged. Prerequisite course C. E. 280. Professor URQUHART.

Design of a reinforced concrete flat-slab building and an investigation of various other types of floor systems for commercial buildings. Complete detail design for one building, including stairways, elevator shafts, penthouses, etc. Working drawings and steel schedules.

ENGLISH

Courses S 1 and S 2 taken together will be considered the equivalent of the first term of Course 1 or of Course 3 in the regular University session.

Courses in brackets are not given in the summer of 1926, but may be expected in the summer of 1927.

S 1. **Composition.** Credit two hours. Daily except Sat., 8. GS 142. Dr. GREENE.

A practical drill intended for those who lack proficiency in writing; discussions of the elements and forms of discourse; frequent exercises, mainly expository; personal conferences at hours to be appointed.

S 2. **Introductory Course in Literature.** Credit two hours. Daily except Sat., 9. GS 164. Dr. GREENE.

An introduction to the study of literature, dealing chiefly with selected works of Chaucer, of Shakespeare, and of Milton.

S 4. Advanced Composition. Credit two hours. Daily except Sat., 11. GS 164. Professor STRUNK.

The planning, writing, and criticism of essays and of other exercises in composition, accompanied by a study of general principles of writing and of questions of English usage. Open only to teachers and to students who have had one year of college English.

S 5. Teachers' Course. Credit two hours. Daily except Sat., 10. GS 156. Professor NORTHUP.

Lectures, readings, reports, and discussions. Designed for those who are teaching or who expect to teach English in schools. The organization of the high school course in English; methods of treating the works named by the Conference on Uniform Entrance Requirements in English; the teaching of literature in general; supplementary reading for pupils and teacher; the use of the school library and the public library; stage productions; the place of language and grammar in the high school; problems of oral and written composition; the relation of composition to literature and to other subjects in the curriculum.

S 6. Nineteenth Century Poetry. Credit two hours. Daily except Sat., 10. GS 162. Assistant Professor BROUGHTON.

A study of the poetry of Wordsworth and Coleridge, and of their relation to the revolutionary movement and to the new birth of English poetry. Texts: *The Poems of Wordsworth* in the Modern Student's Library; *The Poetical Works of Coleridge*, Oxford edition.

S 7. Nineteenth Century Poetry. Credit two hours. Daily except Sat., 11. GS 156. Assistant Professor HEBEL.

A study and discussion of the most important poems of Byron, Shelley, and Keats.

[**S 8. Modern Prose.** Credit two hours. Daily except Sat., 10. GS 162.

A study of a few representative nineteenth century essays on the theory of prose style; illustrative readings in Newman, Ruskin, Pater, and Stevenson.]

S 9. Milton. Credit two hours. Daily except Sat., 12. GS 156. Assistant Professor HEBEL.

A study of Milton's poetry and of selections from his prose.

S 10. Shakespeare. Credit two hours. Daily except Sat., 9. GS 156. Professor STRUNK.

A study of Hamlet, Othello, Lear, and Macbeth, with stress upon the art of Shakespeare as a playwright.

S 11. American Literature. Credit two hours. Daily except Sat., 8. GS 156. Assistant Professor BROUGHTON.

A study of the American poets of the nineteenth century with particular attention to Bryant, Poe, Whittier, Longfellow, Lowell, Holmes, Emerson, and Whitman. Text: Page, *Chief American Poets*.

[**S 12. Victorian Literature.** Credit two hours. Daily except Sat., 8. GS 164.

A study of some typical Victorian prose and poetry, including essays of Carlyle and Arnold, and poems of Clough, Swinburne, Morris, Rossetti, Arnold, Tennyson, and Browning.]

S 13. The English Novel. Credit two hours. Daily except Sat., 11. GS 164. A brief historical survey of the novel in English is followed by detailed study and discussion of the novelists of the nineteenth century. This course may serve as a supplement to course S 12.]

S 16. The English Language. Credit two hours. Daily except Sat., 9. GS 162. Assistant Professor MONROE.

A study of essential features in the growth and development of the mother-tongue. Among the topics considered are: language and grammar in general; some misconceptions about the life of language; the relationships of English; phonetics, with practical exercises; the English vocabulary; inflections; native

resources and foreign influences; modern English grammar; syntax; disputed usages; the bearing of historical grammar on present forms and usages, spoken and written.

Recitations, lectures, collateral reading. The course does not require previous knowledge of Old or Middle English.

S 17. Dramatic Structure. Credit two hours. Daily except Sat., 10. *GS 164.* Professor SAMPSON.

A study of some of the outstanding dramatists of our time: Ibsen, Strindberg, Chekov, Benavente, Shaw. Lectures on the general principles of dramatic construction, and reading of assigned plays. Open only to those who rank as upper-classmen.

S 18. Old English. Credit two hours. Daily except Sat., 12. *GS 162.* Assistant Professor MONROE.

This course is intended for students who, lacking the opportunity hitherto, now wish by earnest effort to acquire some knowledge of English in its early form. Lessons in grammar are followed as soon as possible by the reading of easy prose of the time of Alfred the Great.

The course may be taken by undergraduates; and, with additional reading, by graduates as a part of their work for master's degree. The time of meeting may be changed to suit the convenience of the class.

S 20. Lyric Structure. For graduates. Daily except Sat., 11. *GS 160.* Professor SAMPSON.

An investigation of the underlying construction of short lyric poems, dealing not with versification but with the arrangement of the substance of the poems. Lectures on the several types of structure, and written reports on assigned material.

Open to graduates only, and recommended to candidates for the degree of Master of Arts in English who are in attendance in the Summer Session.

SEMINARY

S 25. Seminary in English Literature. For graduates only. Hours and room to be arranged. First meeting Wednesday, July 8, 3 P. M. *Goldwin Smith 164.* Professor NORTHUP.

Designed especially as an introduction to the graduate study of literature but open also to students who have already done some graduate work. The special topic for the present session is the origins of the drama.

GEOGRAPHY AND GEOLOGY

The lecture rooms and laboratories are in *McGraw Hall*. It is the purpose of this department to meet, primarily, the needs of teachers in grammar schools, high schools, normal schools, and colleges. A second aim is to provide courses of practical and cultural value to college students. The work embraces lectures, laboratory, and field instruction in physical, commercial, and regional geography, and in the elements of geology; also educational methods in geography. The environs of Cornell University are rich in phenomena of geographic and geologic interest. Field excursions, consequently, are made an especially important part of the work of this department in the Summer Session. The laboratories are well equipped with apparatus and illustrative material for instruction. The material includes teaching and reference collections of minerals, rocks, fossils, maps, photographs, models, and more than five thousand lantern slides.

Students planning to take work in the department should, if possible, consult the instructor and register for courses on Monday, July 5, at rooms indicated.

The attention of prospective students in the Summer Session who are especially interested in geographic and geologic studies is invited to courses given in other departments, courses which afford opportunities for additional instruction in these studies. Such courses are described in other pages of this pamphlet under the heads of ASTRONOMY and of METEOROLOGY AND CLIMATOLOGY.

LECTURE COURSES IN GEOGRAPHY AND GEOLOGY

S 1. Physical Geography. Credit two hours. Daily except Sat., 9. *Geological Lecture Room, McGraw Hall* (first floor, south end). Professor VON ENGELN.

An introductory course in physical geography, including discussion of the origin and form of the continents; the uplift and denudation of the land; the physiographic functions of the atmosphere, ground water, streams, winds, and glaciers; the glaciation of North America; the elements of oceanography.

The lectures in physical geography are fully illustrated by lantern slides and by wall and globe maps. Students registering in this course are advised to take also the related courses S 8 and S 10.

Entrance Credit for Physical Geography to Cornell University. To secure entrance credit ($\frac{1}{2}$ unit) in Physical Geography it is required that the student attend, complete all required work, and pass the examinations in courses S 1, S 8, and S 10.

S 2. Commercial Geography. Credit two hours. Daily except Sat., 11. *Geological Lecture Room.* Professor VON ENGELN.

Consideration of the nature, variety, and importance of geographical environment and of natural resources as referred to national coherence and organization, the development of commerce, and the distribution of industries. Lectures and study of texts. The student should gain through this course a broad understanding of the geographic factors that are fundamental to such national problems as conservation, prosperity of different communities, domestic and foreign trade, location and growth of cities.

S 3. Climatic Regions of the World and their Significance. Credit two hours. Daily except Sat., 8. *Geological Lecture Room.* Associate Professor VISHNER.

The major regions of low latitudes, middle latitudes, and high latitudes: the characteristics, development, and special problems of each. A view of the natural regions of the world from the standpoint of climatic contrasts and resultant differences in development and problems. Special emphasis is given to aspects of interest to teachers of elementary geography.

S 4. Teaching of Geography: Methods, Devices, Content, Emphasis, Materials. Credit two hours. Daily except Sat., 10. *Physical Geography Laboratory.* Associate Professor VISHNER.

Designed to give aid to the teacher of elementary and high school geography especially with the presentation of difficult topics, and, in general, to help make the teaching of geography competent and assured.

S 5. Geology. Credit two hours. Daily except Sat., 10. *Geological Lecture Room.* Professor DECKER.

An introductory course in geology, consisting of lectures and assigned readings upon the following topics; origin of the earth; geologic history of the earth; materials of the earth's crust and their arrangement, as well as the forces modifying them; vulcanism, earthquakes, and similar phenomena; development of life on the earth.

The lectures will be illustrated with lantern slides, models, maps, and specimens. Students registering for this course are urged to take the laboratory Course S 9 and, if possible, Course S 10. Credit for Geology course 100 regular session, will be allowed only for successful completion of all three courses S 5, S 9, S 10.

S 6. Mineral Resources. Credit two hours. Daily except Sat., 8. *General Geological Laboratory.* Professor DECKER.

A course in which the principal mineral resources both metallic and non-metallic of the United States will be discussed with reference to the following points: distribution, mode of occurrence, uses, relative importance, rank of the United States among nations of the world in production, and the influence of the various deposits upon the development of the regions in which they occur.

An exceptionally complete collection of specimens is available as illustrative material for this course.

LABORATORY AND EXCURSION COURSES IN BOTH GEOGRAPHY AND GEOLOGY

S 8. Physical Geography, Laboratory Course. Credit one hour. T Th, 2-4. *Physical Geography Laboratory.* Professor LEIGHTON, Professor BROTHERHOOD, and Miss VAN ORDER.

The members of this class will make a systematic study of the physiographic regions of the United States, using contour maps, models, and the experimental laboratory of the department in a laboratory study of the subject. By such study of the topographic, regional, and life relationships (human, animal, and plant) the geography of the United States will be correlated and presented as an orderly whole. The course will prove of worth to teachers of geography in the grades who wish to obtain a broader basis for their work in the subject as well as for those who expect to teach geography in the high schools.

A laboratory fee of \$1 must be paid to the Treasurer at the beginning of the session to cover laboratory maintenance.

S 9. Geology, Laboratory Course. Credit one hour. W F, 2-4. *General Geology Laboratory.* Professor LEIGHTON, Professor BROTHERHOOD, and Miss VAN ORDER.

This course is designed to supplement course S 5. A study will be made of the more common structural phenomena; of the interpretation and uses of geological maps; of characteristic life forms developed in different geologic periods; and of the more common rocks and minerals. Short field excursions will be made to collect both rock specimens and fossils.

A laboratory fee of \$1 must be paid to the Treasurer at the beginning of the session to cover laboratory maintenance.

S 10. Geography and Geology, Field Course. This course should be elected by all those registering in Course S 1 or S 5. With courses S 1 and S 8 it affords a comprehensive course in physical geography; with courses S 5 and S 9 it will give a similarly broad training in elementary geology, as the dynamic phases of geology are emphasized on the excursions. Mimeographed outlines of the excursions are to be secured at the Cooperative Store by each student desiring credit. See also a pamphlet, obtainable at the Cooperative Store, on *The Geography and Geology of the Cornell Region*. Professor LEIGHTON, Professor BROTHERHOOD, Miss VAN ORDER.

Those desiring University or entrance credit must take field notes and hand in written reports. Excursions 1, 2, 4, 5, are required of all students in the course, and in addition for one hour's credit they must make their own choice, excursion 3 and two of 7, 8, 11, or may substitute for these three, excursion 10.

Meeting place and time announced in mimeographed outlines or by bulletin. Meet for first excursion, Monday, July 12, at McGraw Hall, 2:10 P. M. or East Ithaca R. R. Station, 2:30 P. M. Excursions 1-5, Monday afternoons; 7, 8, 11, all day Saturday; 10 starts on Friday night. On the excursions to which a cost is attached, persons wishing to go must register at the department and secure tickets in advance of the date of the trip.

The longer excursions will be in charge of Professor LEIGHTON, with the co-operation and assistance of the other members of the instructing staff. On the excursions stops will be made at points of interest, explanations made, questions asked, and discussion invited.

OUTLINE OF EXCURSIONS: COURSE S 10

Monday Afternoons

1. **Eagle Hill.** To become acquainted with the lie of the land about Cornell, to learn the place names of the broader physiographic features, studying en route processes of weathering, and, at the summit, the maturely dissected plateau. The top of the hill is a vantage point from which a good view of the lake and the land for miles to the north, east, and west may be had. July 12.

2. **Fall Creek and Deadhead Hill.** To study the origin and nature of sedimentary rocks, also processes of erosion, transportation, deposition, and cementation. An intimate view of one of the large gorges and its special features, particularly Ithaca Falls. July 19.

5. **Terminal Moraine.** North Spencer. By auto-bus. To study a massive morainic loop, the basin in which the former ice tongue rested, and the outwash deposits and overflow channels to the south. Truncated valley sides due to

glacial erosion. The most striking examples of glacial phenomena in the Cornell region. July 26.

3. **Shore of Cayuga Lake.** To study snore-line phenomena, joint planes, bedding, and stalactite formation. A walk for several miles along the east shore of the Lake. August 2.

4. **Portland Point.** By auto-bus. To study rock structure; intrusion of igneous rocks into sedimentary formations; rock-folding and small scale faulting and associated phenomena; vein-formation; fossil content of strata; economic utilization for cement. Report must be handed in not later than two days after the excursion. August 9.

All-day Excursions

7. **Taughannock Gorge and Falls.** By steamer. To study the Inlet Plain, its reclamation, the Barge Canal terminal, the position and succession of the Devonian strata along the lake shore and the deep gorge and falls of Taughannock, one of the highest straight falls east of the Rockies. Luncheon at the foot of the falls. July 17.

8. **Enfield Gorge and Falls; and Connecticut Hill.** By auto-bus. To study the relations of preglacial and hanging valleys and the postglacial and interglacial gorges, their origin and features. Joint-plane guidance of stream courses. A ride to the head of the gorge, climb through it to the lower end past the crest of Lucifer Falls. Enfield is perhaps the most picturesque and wildest of the gorges in the Cornell region. Luncheon at the head of the gorge. A ride to the top of Connecticut Hill, the highest point in the region. July 24.

Longer Excursions

10. **Niagara Falls and Gorge, Lake Ontario, the Thousand Islands, and the Black River Valley.** By train, trolley, steamer, launch, and auto-bus. Starting Friday night, July 30, in sleeping cars. Open to all students in the Summer Session as far as accommodations are available. Registration for this excursion should be made early in the session.

All important scenic features of Niagara Falls and Gorge are visited and their physiographic history interpreted. The lower Niagara River and Lake Ontario are studied on a steamer trip to Toronto on Saturday afternoon. Saturday night by steamer to Thousand Islands, and trip around the islands, in launch, to study their physiography and geology. Return across northern New York State and Black River valley by auto-bus on Sunday, August 1.

Before the trip, on Friday, July 30, at 4:30 P. M., a special meeting for those interested will be held in the *Geological Lecture Room*, when the different features to be seen on the excursion will be explained and illustrated with lantern slides and models. Students are advised to procure in advance a copy of the *Niagara Folio*, No. 190, in octavo form; cost fifty cents in coin or money order sent to Director, U. S. Geological Survey, Washington, D. C.

11. **Watkins Glen.** By auto-bus. August 7. Open to all students in the Summer Session, as far as accommodations are available.

Watkins Glen is considered one of the most beautiful scenic spots in the country. It has been secured for a State park by New York and all parts of it made accessible. The excursion party will study the gorge, its pot holes and falls, in detail and consider its relations to the Seneca Lake valley in comparison with the conditions at Ithaca as related to the Cayuga Valley. Ride across the dissected upland country to the south and west between Ithaca and Watkins.

GERMAN

S 1. **First Year German.** Grammar, composition, reading, oral training. Daily except Sat., 8 and 12. GS 183. Assistant Professor ANDREWS. Credit four hours. Entrance credit, one unit.

After successfully completing this course, students can, by supplementary reading during the summer, prepare themselves for the fall entrance examination in second year German.

S 3. Third Year German. Reading, grammar, composition, oral training. Daily except Sat., 8 and 12. *GS 190.* Professor FAUST. Credit four hours. Entrance credit, one unit (third unit).

Prerequisite: two years of high school German or its equivalent.

S 4. Rapid Reading. Daily except Sat., 9. *GS 177.* Credit two hours. Assistant Professor ANDREWS.

German texts of literary value will be read and translated, with casual comment upon their literary significance.

Prerequisite: three years of high school German or the equivalent.

S 5. German Literature Since 1880. Daily except Sat., 10. *GS 190.* Credit two hours. Professor FAUST.

Lectures in German with collateral reading. Beginnings: the lyric, novel, and drama. Foreign influences. The naturalists. Transition to symbolism. Impressionism. Contemporary expressionism.

German Readings. Interpretive readings from modern German literature will be given on Wednesday evenings at 8 o'clock in *GS 190* by Professor FAUST.

GOVERNMENT

S 5. American State Government. Credit two hours. Daily except Sat., 9. *GS 245.* Professor CUSHMAN.

A comparative study of American state governments. State constitutions, their origin, nature, and methods of amendment; the organization and functions of the three departments; current political and administrative problems. This course, which is essentially elementary, is a continuation of the work covered in Government S 1 (American National Government) in the summer of 1925.

S 30. Current Problems of Political and Administrative Reform. Credit two hours. Daily except Sat., 11. *GS 245.* Professor CUSHMAN.

A selected group of contemporary problems bearing upon the organization and functioning of popular government in this country will be studied intensively, i. e., legislative organization, nominating and electoral methods, the short ballot, etc. Each student will be expected to prepare a careful report upon a chosen topic. Open to qualified juniors and seniors and to graduates.

HEALTH EDUCATION

See under Physical and Health Education, page 39.

HISTORY

S 1. The Political History of Greece and Rome, 500 B. C. to 14 A. D. Credit two hours. Daily except Sat., 9. *GS 234.* Professor LAISTNER.

This course will give a general survey of the political history and institutions of Greece and Rome from the time of the Persian Wars to the death of Augustus, with some reference to the social and economic conditions of the period. Lectures and collateral reading.

S 2. Some Aspects of the Social and Economic History of the Roman Empire to the time of Constantine. Credit two hours. Daily except Sat., 10. *GS 245.* Professor LAISTNER.

This course will treat in some detail a select number of important topics in the period, such as land cultivation and the origins of the colonate, the organization of the food-supply, the development of commerce and industry.

S 3. Modern European History. Credit two hours. Daily except Sat., 10. *GS 242.* Professor BECKER.

A general treatment of the history of Europe since 1815.

S 4. The French Revolution. Credit two hours. Daily except Sat., 11. *GS 242.* Professor BECKER.

A descriptive survey of the institutions of France in the Old Regime, followed by a study of the Revolution from 1789 to 1795.

S 7. **English History.** From 1660 to the present. Credit two hours. Daily except Sat., 9. GS 225. Professor NOTESTEIN.

A general course adapted to the needs of teachers and advanced students as well as of undergraduates. Lectures and assigned reading.

S 8. **British Diplomacy since 1815.** Credit two hours. Daily except Sat., 11. GS 234. Professor NOTESTEIN.

A pro-seminary course open to teachers and advanced students.

S 10. **American History, 1750-1830.** Westward Expansion. Credit two hours. Daily except Sat., 8. GS 234. Professor BRETZ.

This course deals with the exploration of the trans-Alleghany country, the movement of population into the West, Indian wars and relations with foreign powers on the frontier, territorial acquisitions, land policy, industrial development of typical communities, and in general with the social life of the new communities between the Alleghanies and the Mississippi. Lectures and readings.

S 11. **American History, 1787-1850.** Credit two hours. Daily except Sat., 10. GS 234. Professor BRETZ.

A general treatment of the period. Special attention will be given to new historical literature, biographies, memoirs, and published source material. Lectures and readings. The text will be C. R. Fish, *The Development of American Nationality*.

S 15. **American History Seminary.** Hour of meetings and credit (not in excess of two hours) to be arranged. Professor BRETZ.

For students who are working on theses. Consult the instructor before registering.

S 16. **History in the Secondary Schools.** Credit two hours. Daily except Sat., 10. GS 221. Dr. SMITH.

The content and methods of history teaching in the high school; textbooks; collateral reading; visual aids.

S 17. **Contemporary History** and its teaching in the secondary schools. Credit two hours. Daily except Sat., 12. GS 234. Dr. SMITH.

The history of Europe since the war: the Peace Treaty; the conferences of the premiers and of the ambassadors; the League of Nations; England; France; Italy; Germany; Austria; Hungary; Czechoslovakia; Jugoslavia; and Poland. Both in method and in content the course will be useful to teachers in secondary schools, especially such as teach the courses in world history prescribed by the new syllabus of the University of the State of New York.

LATIN AND GREEK

The object of the Summer Session courses in Latin is two-fold:

(a) to provide a series of courses, theoretical and practical, dealing with the professional training and equipment of the high-school Latin teacher who desires a thorough comprehension of the aims and of the technique of the recent developments in classical study in the secondary schools;

(b) to offer graduate courses with direction of graduate work for those who are qualified to enter the Graduate School as candidates for the degree of Master of Arts with a major or a minor in Latin.

(Students who desire to obtain entrance credit for third or for fourth year Latin will find courses S 2 and S 3 of value in their preparation for the entrance examinations.)

S 1. **The Training of Latin Teachers.** Lectures, discussions, and conferences. The objectives in secondary Latin instruction and the evaluation of these objectives; the methods and the technique of instruction; standards and means of determination of progress, and the validity of various types of test in indicating measure of success in instruction. Additional examination and discussion will be devoted to the General Report of the Classical Investigation, and to the other reports as far as they are published. Daily except Sat., 11. GS 120. Credit two hours. Dr. GRAY.

S 2. The Content of the High-School Latin Courses. The object of this course is to familiarize the teachers of secondary Latin with several hundred pages of highly interesting and relatively easy Latin, available as substitutes for or supplements to the conventional portions of Caesar, Cicero, and Virgil. The extent and the availability of such reading material will be carefully discussed. Daily except Sat., 12. *GS 120*. Credit two hours. Dr. GRAY.

S 3. Oral Latin. Progressive training in the classroom use of Latin in conversation throughout the work of the four preparatory years. The course will include a detailed consideration of Latin pronunciation and of the oral reading of Latin prose and poetry. Daily except Sat., 9. *GS 128*. Credit two hours. Professor BENNETT.

S 4. Roman Comedy. Selected plays of Plautus and Terence. Lectures on the development of Roman drama, the construction of the Roman theater and the presentation of plays. Primarily for graduate students, candidates for the Master's degree. Daily except Sat., 10. *GS 128*. Credit two hours. Professor BENNETT.

S 5. Introduction to Greek. This course is intended (a) for high school teachers of Latin who have had no opportunity for direct acquaintance with Greek and are therefore deprived of one of the chief sources of understanding and appreciating the content of the Latin authors which they present in classroom; (b) for students of literature who desire by intensive work during a summer session to lay the foundation for a first-hand appreciation of the literary masterpieces of the Greek genius. Beginning with the alphabet, the course will give a thorough grounding in necessary forms, flexions, and syntax, and will proceed to the interpretation of at least two books of Homer's *Iliad*. Daily except Sat. 8 and 12. *Goldwin Smith 124*. Credit four hours. Assistant Professor CAPLAN.

Completion of this course will carry one unit of entrance credit. Students who have not had at least three good years of preparatory Latin are, however, not advised to take the course for credit toward fulfillment of entrance requirements.

NOTE: Those who wish to begin their candidacy for the degree of Master of Arts are requested to correspond in advance with Professor CHARLES L. DURHAM and to bring with them at the opening of the Summer Session such credentials of undergraduate work leading to the degree A.B. as will entitle them to admission to the Graduate School.

MATHEMATICS

In addition to the courses noted below, each teacher will have a daily office hour for consultation with students. It is urged that this opportunity be utilized by all concerned.

In the following list, courses S 1 to S 5 (b) are the equivalent of those having the same numbers in the *Announcement of the College of Arts and Sciences for 1925-26*.

Courses S 1, S 2, S 3 are planned for those teachers in the secondary schools who wish to review these subjects. They are equivalent to the advanced entrance requirements of Cornell University and of the College Entrance Examination Board. They presuppose a ready knowledge of elementary algebra (through quadratic equations) and of plane geometry. University credit for S 1, S 2, S 3, three hours each.

Students taking S 5 (a) or S 5 (b) are requested to take no other University work during the session without special permission.

University credit for S 5 (a), S 5 (b), five hours each.

S 1. Solid Geometry. Daily, 11. *White 1*. Professor GILLESPIE. (Office hour, 9, *White 3*.)

S 2. Advanced Algebra. Daily, 9. *White 28*. Professor SHARPE. (Office hour, 11, *White 29*.) *White 25*. Professor HUTCHINSON. (Office hour, 11, *White 26*.)

S 3. Trigonometry. Daily, 10. *White 28*. Professor SHARPE. (Office hour, 11, *White 29*.) *White 25*. Professor HUTCHINSON. (Office hour, 11, *White 26*.)

S 5 (a). **Analytic Geometry and the Calculus** (First term's work). Daily, 8 and 11. *White 5*. Assistant Professor CRAIG. (Office hour, 9, *White 4*.)

S 5 (b). **Analytic Geometry and the Calculus**. (Second term's work.) Daily, 8 and 11. *White 6*. Professor HURWITZ. (Office hour, 9, *White 8*.) *White 2*. Assistant Professor OWENS. (Office hour, 9, *White 4*.)

S 20. **Teachers' Course**. Credit two hours. Daily except Sat., 11. *White 24*. Professor SNYDER. (Office hour, 10, *White 26*.)

The course will comprise the selected topics in the subjects of secondary school mathematics, including constructions by ruler and compass and the solution of equations. The mutual dependence of algebra and geometry in the solution of problems will be emphasized.

ADVANCED COURSES

S 61. **Projective Geometry**. Credit three hours. Daily, 8. *White 10*. Professor CARVER. (Office hour, 9, *White 12*.) The principles underlying projective forms of the first and second degrees will be developed. Although no knowledge of mathematics beyond plane geometry will be presupposed, additional training is highly desirable.

S 42. **Analysis**. Credit three hours. Daily, 10. *White 1*. Professor GILLESPIE. (Office hour, 9, *White 3*.) A knowledge of the calculus is presupposed. The content of the course will vary from year to year, according to the needs and desires of the students. Correspondence from possible applicants for the course will be welcome. The subjects to be treated will generally be selected from the following list: elementary differential equations, theory of limits and logical foundations of the calculus, theory of point-sets, infinite series, theory of functions of a complex variable.

S 62. **Analytic Geometry**. Credit three hours. Daily, 9. *White 24*. Professor SNYDER. (Office hour, 10, *White 26*.)

A knowledge of projective geometry is presupposed. The content of the course varies from year to year, according to the needs of those interested. Correspondence from prospective candidates is invited. The subjects to be studied will be chosen from the following list: quadratic inversion, resolution of singularities, Plucker's numbers, cubic and quartic curves, Cremona transformations.

READING AND RESEARCH COURSES

In addition to the preceding courses, the teachers of mathematics offer the following opportunities to graduate students. Instruction will consist of conferences by appointment, direction of reading, and proposing definite problems for research.

Functions of a Complex Variable. Professor HUTCHINSON, Assistant Professor CRAIG.

Algebraic Curves and Surfaces. Problems in correspondence and birational transformations. Professor SNYDER.

Applied Mathematics. Problems in hydrodynamics: heat, electricity, and elasticity. Professor SHARPE.

Foundations of Geometry and Problems in Synthetic Geometry. Professor CARVER and Assistant Professor OWENS.

Functions of a Real Variable, Point-sets, Calculus of Variations. Professor GILLESPIE.

Advanced Analysis. Problems in the theory of functions, differential equations, and integral equations. Professor HURWITZ.

MUSIC

S 10. **Harmony**. Credit two hours. Daily except Sat., 8. *Morse 105*.

A course dealing with the construction and interconnection of triads and chords of the seventh. Assistant Professor H. D. SMITH.

S 14. **Musical Appreciation, Form, and Design**. Credit two hours. Daily except Sat., 12. *Morse 105*. Mr. KROEGER.

A course in musical analysis, including form and design, and furnishing a rational basis for the appreciation of musical masterpieces of all schools.

S 18. History of Music. Credit two hours. Daily except Sat., 11. *Morse* 105. Mr. KROEGER.

The historical growth and development of music to the present time.

S 20. Music in the Public Schools. Credit two hours. Daily except Sat., 9. *Morse* 105. Mr. SEITZ.

An introduction to the general problem of school music: its value as an educational subject; principles underlying classroom methods; practical suggestions for upper grade teachers.

S 22. Music in the High Schools. Credit two hours. Daily except Sat., 10. *Morse* 105. Mr. SEITZ. A study of the particular problems of the Junior and Senior High School; evaluation of methods and materials; practical applications developed.

Chorus. The Department of Music will organize and maintain a choir for the services in Sage Chapel at 11 o'clock each Sunday morning during the Summer Session. The individual tests for this choir will be held in Sage Chapel on Monday July 5 from 9:30 to 12:30 and 2:30 to 5:00. The rehearsals will be held on Thursday at 5 o'clock and on Sunday at 10. All students having voices and desiring to sing are urged to become members of this choir.

PHILOSOPHY

S 1. The Renaissance. Daily except Sat., 12. *GS* 225. Credit two hours. Professor HAMMOND.

Studies in the civilization of the Renaissance with special reference to the fine arts, the rise of humanism, and the beginning of modern philosophical and political theories.

S 3. Greek Civilization. Daily except Sat., 10. *GS* 225. Credit two hours. Professor HAMMOND.

A history of the chief Greek systems of philosophy and their survival in the Roman Empire and in Christian civilization. Particular attention will be given to the Greek ideals of life as expressed in their literature, art, and political theory and practice.

S 5. Philosophical Ideas in Nineteenth Century Literature. Daily except Sat., 11. *GS* 225. Credit two hours. Professor ALBEE.

After considering the tendencies of eighteenth century thought, the course will deal with the interpretations of life offered by well known authors of the nineteenth century, English, continental, and American, and the relationship of such interpretations to the recognized tendencies of contemporary philosophy. Primarily for juniors and seniors.

PHYSICAL AND HEALTH EDUCATION

The following courses are designed primarily for teachers and supervisors of physical education in public schools, and for students who wish to supplement the preparation they may have received in colleges or professional schools. The courses are also open to other students and to teachers who may wish to take either the theory or practice courses or both, and whose application has been approved by the Chairman of the Summer Session.

S 1. History and Literature of Physical Education. Credit two hours. Daily except Sat., 8. *GS* 134. Professor YOUNG.

An historical survey of the distinguishing characteristics of various peoples as to habits of living and forms of physical activity, and the part these have played in their national development. This course will alternate in successive summers with a survey of what might be termed the Modern Developments of Physical Education.

S 2. Organization and Supervision of Physical Education. Credit two hours. Daily except Sat., 10. *GS* 221. Dr. CURTIS.

A study of values; the objects and scope of physical education and the principles and technique involved in its teaching and in the organization of a program. Lectures, discussions, and special papers.

S 3. Organization of Playgrounds and Play Activities. Credit two hours. Daily except Sat., 2. *GS 134.* Dr. CURTIS.

The social and educational value of play, with a consideration of the principles of organization and selection of activities. Lectures, discussions, and special papers.

S 4. Physical Training in the Public School. Credit two hours. Daily except Sat., 12. *GS 134.* Dr. ANDERSON.

Methods of teaching, plan of organization of classes, groups and section and grading of pupils. Selection of suitable exercises, daily programs, lesson content, classification of exercises, etc.

S 5. Anthropometry. Credit one hour. M W F, 10. *GS 120.* Professor YOUNG.

Physical measurements and their practical application to problems of growth and development.

S 6. Physiology of Exercise. Credit one hour. M W F, 12. *Stimson.* Dr. GOULD.

The nature and importance of the processes taking place in the body during muscular exercise; effects of exercise upon the heart and blood vessels; the co-ordination of the circulation and respiration; the after-effects of exercise. *A knowledge of human physiology is a prerequisite for admission to this course.*

S 7. Kinesiology and Corrective Exercises. Credit two hours. Daily except except Sat., 11. *Stimson.* Dr. GOULD.

This course deals with the principles and mechanisms of bodily movements. The mechanism of representative types of exercise is studied for the purpose of determining as far as possible their effects upon health. Exercises for the correction of functional bodily deformities are studied.

A course in human anatomy should preferably precede this course although not absolutely necessary.

S 8. Human Anatomy. Credit three hours. Daily except Sat., 8-10. *Stimson.* Dr. GOULD.

A course in the gross anatomy of the body presenting a general knowledge of the relations of the bones, muscles, nerves, and blood vessels. The viscera of the body will be considered in connection with the systems of which they are a part.

The course will consist of lectures and demonstrations with the dissected cadaver, anatomical charts, models, and museum preparations.

S 9. High School Gymnastics (Men). Daily except Sat., 3:00-4:30. *Old Armory.* Dr. ANDERSON.

Floor work, consisting of light and heavy apparatus, calisthenics, dancing, recreational work, and individual squad and mass games.

S 10. High School Athletics (Men). Daily except Sat., 4:30-6:00. *Old Armory and Athletic Field.* Dr. ANDERSON.

Practical coaching in football, track, basketball, and soccer, including rules, methods of selection, plays, training, etc.

S 11. High School and College Gymnastics (Women). Daily except Sat., 3. *Sage Gymnasium.* Miss RYAN.

Swedish and Danish Gymnastics, with Tactics.

S 12. High School and College Athletics (Women). Daily except Sat., 5. *Women's Athletic Field.* Miss RYAN.

Practical coaching in track, hockey, basketball, archery, fencing, and soccer. Only those sports will be considered for which there is sufficient registration. It is requested that selection be made and names sent in by June 1st, if possible.

S 13. Folk Dancing. Daily except Sat., 12. *Sage Gymnasium.* Miss RYAN.

S 14. Aesthetic Dancing. Daily except Sat., 4. *Sage Gymnasium.* Miss RYAN.

S 15. Swimming. For women, *Sage Gymnasium*, 9-12 A. M., 2:30-5 P. M. For men, *Armory Gymnasium*, by appointment. Mr. GELAS and Mr. O'CONNELL.

Instruction in swimming and life saving for individual training and for teaching will be given at hours to be arranged with each applicant by appointment. For this instruction a special charge of ten dollars is made.

HEALTH EDUCATION

S 1. Hygiene of the School Child and Adolescent. Credit two hours. Daily except Sat., 9. *Stimson.* Dr. SMILEY.

In this course an attempt will be made to present the principles of personal hygiene as they apply to the health instruction and health maintenance of the child or adolescent in his school life. Prerequisites suggested, Biology and Physiology.

S 2. Environmental and Group Hygiene (Sanitation and Public Health). Credit two hours. Daily except Sat., 9. *Stimson.* Dr. JENNETTE EVANS.

An informational course designed to treat in a general way community health problems involving the school group.

Prerequisites suggested but not demanded, General Biology S 1, General Bacteriology S 42.

S 3. Health Inspection of School Children. Credit two hours. Daily except Sat., 8. *Stimson.* Dr. JENNETTE EVANS.

A practical course of lectures and demonstrations designed to familiarize the student with the facts and methods necessary for making an effective health inspection of school children. Prerequisites suggested but not demanded, Human Physiology S 28, Human Anatomy.

S 4. First Aid and Safety First. Credit one hour. M W F, 12. *Stimson.* Dr. SMILEY.

This course will include a discussion and practical demonstration of the main methods at hand for preventing accidents and for giving emergency treatment.

University credit will be given in the courses as indicated, subject however to the rules and regulations of the colleges in which a degree is sought.

The following courses, which are required for the New York State Teacher's Certificate in Physical Education, and for which regular University credit is given, are offered in the Summer Session. Education, English, Foreign Language, Chemistry, Physiology, History, Biology, Psychology, Educational Psychology, Zoology, Economics.

PHYSICS

Demonstration Lectures. A series of experimental demonstrations covering the entire field of Physics. Little time will be spent on the development of the related theory, this being left for the classroom work of the courses described below. Teachers may find in these demonstrations valuable suggestions for their own work. These lectures are a required part of courses S 3 and S 6. Daily, 8. *Rockefeller A.* Assistant Professor COLLINS.

S 3. Introductory Experimental Physics. Credit six hours. Demonstration lectures, recitations, and laboratory work. Lectures, daily, 8. *Rockefeller A.* Recitations, daily, 9; quiz, M, 10-12. *Rockefeller 109.* Assistant Professor COLLINS. Laboratory, three two-hour periods a week. Section A, M, 2-4 and T Th, 10:30-12:30; Section B, W F, 10:30-12:30 and Th, 2-4. *Rockefeller 220.* Assistant Professor POWER and Mr. MAY.

S 6. Introductory Physics. Credit six hours. Demonstration lectures and recitations. Prerequisites, Mathematics S 1, S 2, and S 3, or their equivalent. Lectures, daily 8. *Rockefeller A.* Recitations, daily, 9; quiz, M, 10-12. *Rockefeller 107.* Assistant Professor HOWE.

S 9. General Physics. Credit two hours. Theory and problems covering selected topics in light and electricity. It is recommended that Physics S 65 be taken simultaneously with Physics S 9. Prerequisites, Physics 6 or its equivalent, and calculus. Recitations daily except Sat., 8. *Rockefeller 106.* Professor LOVING.

S 14. Physical Measurements. The schedule of experiments comprising this course may be taken in Physics S 65, which see.

S 55. Physical Experiments. Credit two hours. For teachers of elementary physics and for others wishing a greater familiarity with laboratory work. M W F, 10-12:30, Th, 2-4:30. *Rockefeller 220.* Mr. MAY.

A general laboratory study of the fundamental physical laws and constants, partly from the qualitative, partly from the quantitative point of view. The work

may be varied to suit the interest of the student, since the instruction is in all cases individual. This course presupposes a knowledge of introductory physics.

S 65. Physical Measurements. Credit one to four hours. Primarily for teachers and students who wish a thorough introduction to the theory and methods of physical measurements. Prerequisites, the equivalent of eight hours of college Physics and a knowledge of the elements of calculus. One to four three-hour periods a week. M W F, 2-5 and T Th, 9-12. *Rockefeller 252.* Professor LOVING and Mr. SEEMANN.

The methods of setting up and adjusting apparatus, the study of sources of error and their elimination, methods of computation, the interpretation of results, both analytically and graphically, have special emphasis. The instruction is individual and the topics covered may be adjusted to meet the needs of the student.

S 90. Teachers' Course. Credit two hours. Lectures, discussions, and conferences, with emphasis upon the selection, organization, and presentation of subject-matter and practice in the care and manipulation of apparatus in classroom and laboratory. Daily except Sat., 9. *Rockefeller 108.* Assistant Professor POWER.

Conferences, individual or by groups, may be arranged for the discussion of practical problems suggested by members of the class. Teachers are advised to bring with them a copy of the textbook which they are using.

S 106. Advanced Laboratory Practice. Open to students who have had Physics S 65 (four hours of credit) or its equivalent. Credit varies with the amount of work done. The laboratory is open daily except Sat., 9-12. *Rockefeller 301.* Professor GIBBS and Assistant Professor TUCKER.

This course is intended to meet the requirements of the following classes of students: (1) those wishing to take up special topics for detailed study; (2) those taking Course S 122 or S 140 and desiring to supplement that work in the laboratory; (3) those who wish to develop their laboratory technique in preparation for research.

[The sequence of courses S 111 to S 140 is intended to run through three summer sessions. The schedule for the next three summers is: 1926, S 122 and S 140; 1927, S 130 and S 111; 1928, S 121 and S 112. The courses are of the same general character as the corresponding courses given in the fall and spring terms but include somewhat fewer topics. The selection of these topics will be influenced by the interests and needs of the class. To profit by these courses a student should have a knowledge of calculus and should have completed courses in general physics covering the principal topics of the subject. A student who contemplates electing any of these courses is advised to correspond with the department about his preparation for the work. These courses, as also S 106, S 415, and S 581, may be taken for credit toward a master's degree in Physics, subject to the requirements of the graduate school. See the *Announcement of the Graduate School.*]

[S 111. **Mechanics.**] Not given in 1926.

[S 112. **Properties of Matter.** The analysis of stresses and strains and some applications; surface tension; the motion of fluids and the effects of viscosity.] Not given in 1926.

[S 121. **Electricity and Magnetism.** Credit two hours. Electrostatic and magnetic fields, direct current phenomena; gaseous, electrolytic, and metallic conduction; chemical and thermal electromotive forces.] Not given in 1926.

S 122. **Electricity and Magnetism.** Credit two hours. Electromagnetism, variable current phenomena, electric oscillations. Daily except Sat., 8. *Rockefeller C.* Assistant Professor TUCKER.

[S 130. **Light.** Geometrical optics; thick lenses; optical instruments. Physical optics: interference, diffraction, polarization.] Not given in 1926.

S 140. **Heat.** Credit two hours. Thermometry; heat transfer; equations of state; kinetic theory of gases; thermodynamics. Daily except Sat., 12. *Rockefeller C.* Assistant Professor HOWE.

S 415. **Special Topics for Investigation.** Students who are prepared to profit by the use of the library and laboratory facilities of the department in the study

of some special topic or in investigation will be given an opportunity to do so. This work may be taken in connection with or independently of any of the above courses and will be under the direction of one or more members of the staff, with whom frequent conferences should be arranged. Credit varies with the nature and amount of work done.

For further information regarding opportunities for research and investigation during the summer see the *Announcement of the Graduate School*.

S 581. Atomic Structure. Credit two hours. Prerequisite a thorough general course in physics and calculus. Daily except Sat., 2. *Rockefeller 107.* Professor GIBBS.

The development of modern atomic theory and its application in the explanation of spectral series, resonance and ionizing potentials, and fine structure; the structure of the nucleus as revealed by radio active and isotopic phenomena and the effects of high speed bombardment.

PSYCHOLOGY

S 1. Psychology. Credit two hours. Lectures, M T W Th, 9. Professor TITCHENER. Recitations, F, 9. *GS C.* Professor WELD, Dr. FELDMAN, and Mr. KREEZER.

This course furnishes a general introduction to the study of the normal human mind from the experimental point of view. It opens with a brief discussion of the nature of a scientific psychology, of the problems which such a psychology is called upon to face, and of the methods at its disposal for their solution. It then sets forth in order the facts and laws of mental life as indicated by experiment, beginning with sensation, image, and affection; it passes by way of attention, perception, association, and memory to the highly complex processes of imagination, voluntary action, and thought. Throughout the work use will be made of the unique collection of demonstrational apparatus which composes the equipment of a special laboratory in Goldwin Smith Hall.

Textbook: Titchener, *Textbook of Psychology*.

S 2. Attention. Credit two hours. Daily except Sat., 10. *GS C.* Assistant Professor DALLENBACH.

In this course the applications of attention to advertising, to conjuring and sleight of hand, to hypnosis, to testimony, to efficiency, and to learning, will receive special emphasis. The application will, however, be made only after the student has been grounded in the elementary facts and laws of attention. The development, the conditions, the kinds, and the levels of attention will first be considered; then the experimental investigations will be reviewed; and thereafter the practical considerations will be taken up.

Demonstrations and class-experiments will be used frequently for illustration. No textbook will be prescribed, but the lectures will be supplemented by assigned readings in standard works.

S 3. Memory and Learning. Credit two hours. Daily except Sat., 8. *GS C.* Professor WELD.

The chief topics to be treated in this course are: the general nature of memory; the curve of learning; the conditions of impression, association, recall, and recognition; the correlation between different memories and between memory and other mental functions; teaching and the presentation of material; recitation and examination; "cramming" and efficient study; unusual memories and their conditions; the formation and the breaking of habits; mnemonic schemes and the "training" of memory.

Demonstrations and class-experiments will be made throughout the course. Readings will be assigned in standard texts and monographs to be found in the library.

S 4. Qualitative Laboratory. Credit two hours. M W F, 2:00-4:30. *Psychological Laboratory, Morrill Hall.* Professor WELD and Mr. KREEZER.

The purpose of this course is to furnish the student training in psychological method, and to give him a first-hand acquaintance with the contents of his own mind. The laboratory consists of twenty-seven rooms on the upper floors of Morrill Hall, including dark rooms, workshops, and offices. The equipment on

the side of apparatus is especially complete, embracing besides the standard pieces for qualitative experiments a great variety of special instruments. The equipment of the research laboratory is also available for demonstrations. Experiments will be performed in vision, audition, and the other departments of sense, in feeling, attention, perception, and idea, and toward the end of the work the student may carry out experiments upon the more complex processes of association and action. The textbook is Titchener's *Experimental Psychology*, vol. i, Qualitative Student's Manual.

S 5. Quantitative Laboratory. Credit two hours. Three afternoons (to be arranged), 2:00-4:30. *Psychological Laboratory, Morrill Hall.* Assistant Professor DALLENBACH and Dr. FELDMAN.

This course aims to furnish such training in the psychological methods and in the handling of instruments of precision as will be adequate preparation for research problems. The students will make experimental determinations of the stimulus limens, will attempt verifications of Weber's Law in various departments of sense, and will perform at least one experiment by each one of the chief psychophysical methods. Quantitative experiments in special fields may be undertaken in so far as time permits. Textbook is Titchener's *Experimental Psychology*, vol. ii, Quantitative Student's Manual.

Laboratory partnerships must be formed if the work of this course is to be pursued with profit. If, therefore, a partner cannot be found, the student is recommended to register in course S 7.

S 6. Technique of the Laboratory. Hours (three) to be arranged. *Psychological Laboratory, Morrill Hall.* Mr. KREEZER.

This course will discuss the equipment of a psychological laboratory, in the various fields of investigation and at various levels of expense. Demonstrations, with special emphasis upon principles of construction, will be given of standard pieces of apparatus contained in the Cornell University laboratories.

S 7. Experimental Problems. Hours and credit to be arranged. *Psychological Laboratory, Morrill Hall.* Professor WELD, Assistant Professor DALLENBACH, Dr. FELDMAN, and Mr. KREEZER.

Courses S 1, S 4, and S 5, or their equivalents, are prerequisites for this course. The work will consist of the original study of certain experimental problems, and will involve both observation and manipulation of instruments.

S 8. Brentano's Psychology: Advanced Course. Daily except Sat., 11. GS C. Professor TITCHENER.

This course presupposes S 1 and S 4 or their equivalents. Brentano's *Psychologie vom empirischen Standpunkte* will be read by the class, and the author's influence upon modern psychology will be discussed and illustrated.

Those who intend to take the course should bring a copy of the *Psychologie* with them.

PUBLIC SPEAKING

ORAL ENGLISH: SPEECH TRAINING: DRAMATICS

All summer courses are planned to meet the special needs of teachers. Either S 3 or S 9 (not both) may be counted as a course in methods approved by the New York State Department of Education for the teachers' certificate.

Students should register with the individual instructors, who will be in their offices on registration day and on the first day of instruction. For further details about registration consult Assistant Professor MUCHMORE, GS 25.

S 1a. Public Speaking. Credit two hours. Daily except Sat., 8. GS 21. Mr. THOMAS; daily except Sat., 11. GS 236. Assistant Professor WICHELSN.

A practical training for speaking in public. Study of delivery, of methods of preparation, and of rhetorical forms, with practice in the delivery of various types of original speeches, and of declamations. High-school teachers will find the methods applicable to their work in public speaking and oral English. Regular students passing S 1a are admitted to the second term of Public Speaking 1.

S 1b. Argument and Debate. Credit two hours. Daily except Sat., 10. GS 21. Mr. GILMAN.

A study of the principles of conviction and persuasion: training in analysis, in the use of evidence, in brief-drawing, and in rhetorical presentation, with practice in debating and drill in delivery. S 1b will be considered equivalent to the second term of Public Speaking 1.

S 3. Teachers' Course in Oral English and Public Speaking. Credit two hours. Daily except Sat., 12. GS 26. Assistant Professor MUCHMORE.

For secondary school teachers of English and public speaking. Aims, problems, standards, and methods in oral English, public speaking, and speech training.

S 4. Rhetorical Theory. Credit two hours. Daily except Sat., 9. GS 236. Assistant Professor WICHELS.

For graduates and qualified undergraduates. The rhetorical theory of Aristotle, Quintilian, Bacon, Bain, DeQuincey, Whateley, and Spencer in relation to persuasive discourse.

S 8. Voice Training. Credit one hour. Daily except Sat., 11. GS 21. Mr. THOMAS.

A fundamental course for teachers of oral English and public speaking. Exercises for the development of pure tone, flexibility, melody and strength of voice, clear enunciation; training for poise and ease of action.

S 8a. Principles of Voice Training and Speech Correction. Credit two hours. Hours to be arranged. Assistant Professor MUCHMORE.

For graduates and other students having sufficient preparation for independent work. Readings in the sciences underlying voice-training and speech-correction, with a critical survey of theories and methods.

S 9. Teachers' Course in Speech Training. Credit two hours. Daily except Sat., 10. GS 26. Assistant Professor MUCHMORE.

For secondary and elementary school teachers. A study of English phonetics, voice training, pronunciation, the principles of oral expression, and the improvement of speech.

S 10. Oral Interpretation of Literature. Credit two hours. Two sections: daily except Sat., 10. GS 236. Mr. HANNAH; daily except Sat., 12. GS 236. Mr. HANNAH.

Principles of reading, and oral interpretation of literature.

S 30. Play Production. Credit two hours. Daily except Sat., 9. GS B. Assistant Professor HULTZEN.

Theory of stage direction; choice of plays; practical phases of production; one-act plays rehearsed; practice with the Summer Theatre. Students in S 30 may be required to take S 10 or to offer its equivalent.

S 22. Rural Social Organization—Play Production. Open only to students in the Summer School of Agriculture. Credit two hours. Daily except Sat., 11. GS B. Assistant Professor HULTZEN. See p. 71.

S 20. Rural Social Organization.—Pageantry. Credit two hours. Daily except Sat., 10. *Roberts Assembly.* See the *Announcement of the Summer School of Agriculture.* Miss DUTHIE.

S 33. Stagecraft. Credit two hours. Daily except Sat., 10, with additional laboratory hours to be arranged. GS B. Mr. STANTON.

An elementary course in stage theory and practice; the planning of small theatres; design and construction of scenery; lighting; with attention to other contributory crafts and to the related principles of stage direction.

S 35. Dramatic Art. Credit two hours. Hours to be arranged. Professor DRUMMOND.

For graduates and other students prepared for advanced work in the theory of the theatre.

S 40. Seminary. Hours to be arranged. Assistant Professor WICHELS. For graduates engaged in the study of special subjects in rhetoric and public speaking.

The Summer Pageant.

The pageant presented under the auspices of the Department of Rural Organization and of the Summer Theatre will provide practice for members of the course in Pageantry; members of the course in Dramatic Production are invited to assist.

The Summer Theatre. Under the direction of Professor DRUMMOND. Assistants: Mr. WOEHL, Mr. STAINTON, Mr. DUNHAM, and Miss CASEY.

During the Summer Session weekly performances will be given by the student repertory Summer Theatre Company. Qualified members of the courses in Dramatic Production may assist in the work of the Theatre.

ROMANCE LANGUAGES

FRENCH

S 1. Elementary Course. Credit four hours. Daily except Sat., 8 and 12. *GS 290.* Mr. TAUPIN. Entrance credit, one unit.

The object of this course is twofold: first, to give beginners a thorough drill in the essentials of French pronunciation, grammar, and reading; second, to offer to teachers an opportunity of studying the methods of presentation of these subjects to beginners.

S 2. Intermediate Course. Credit four hours. Daily except Sat., 8 and 12. *GS 283.* Mr. CROS.

Entrance credit, one unit. Prerequisite course S 1 or its equivalent.

S 3. Advanced Course. Credit four hours. Daily except Sat., 8 and 12. *GS 227.* Mr. PELMONT.

Entrance credit, one unit. Prerequisite S 2 or its equivalent.

S 4. Advanced Translation. Credit two hours. Daily except Sat., 9. *GS 183.* Prerequisite course S 3 or its equivalent. Mr. TAUPIN.

S 5. Elementary Composition and Conversation. Credit two hours. Daily except Sat., 11. *GS 290.* Prerequisite course S 3 or its equivalent. Mr. PELMONT.

S 9. Advanced Composition and Conversation. Credit two hours. Daily except Sat., 9. *GS 283.* Professor PUMPELLY.

Rapid translation from standard English texts into French; frequent theme-writing. This course is conducted in French.

S 21. Contemporary French Poetry. Credit two hours. Daily except Sat., 11. *GS 283.* Professor MASON.

Lectures and discussions of special topics in contemporary poetry with extensive outside reading and reports.

S 23. Introduction to French Philology. Credit two hours. Daily except Sat., 11. *GS 177.* Professor PUMPELLY.

[S 30. The Teaching of French. Credit two hours. Daily except Sat., 10. *GS 283.*

A detailed discussion of the more modern methods of teaching French. Lectures, assigned reading, and observation.] Not given in 1926.

[S 31. Phonetics. Credit two hours. Daily except Sat., 9. *GS 283.* Professor MASON.

Lectures on the basic phonetic laws of French and English; practical exercises in phonetic transcription. This course is especially for teachers of French but is open to all students who wish to study the pronunciation of French.] Not given in 1926.

S 33. French for Teachers. Credit two hours. Daily except Sat., 9. *GS 290.* Professor MASON.

Rapid review of grammar, conversation, free composition, and phonetics. The course is specially designed for those who wish to prepare for the oral credit examination in French of the State Department of Education which will be given between August 7th and 12th.

S 34. The Modern Drama. Credit two hours. Daily except Sat., 10. *GS 277.* Professor GUERLAC.

Lectures in French on the modern drama. Some of the more important plays will be read in the class.

S 35. France of Today. Credit two hours. Daily except Sat., 12. *GS 277.* Professor GUERLAC.

Lectures in French on the social, intellectual, and political life of the present.

S.47. **French Seminary.** M W F, 10. *French Seminary Room, Library.* Professor MASON.

Discussion of special topics in the field of modern French literature. This course is especially for graduate students and candidates for the degree of Master of Arts.

French Lectures. A series of lectures in French dealing with French national life will be given by the members of the instructing staff on Wednesday evenings at 8 o'clock in *Goldwin Smith Hall*, Room 290.

SPANISH

S 1. **Elementary Course.** Credit four hours. Daily except Sat., 8 and 12. GS 264. Assistant Professor CROWELL.

Entrance credit, one unit.

S 2. **Intermediate Course.** Credit four hours. Daily except Sat., 8 and 12. GS 281. Mr. KINGERY.

Entrance credit, one unit.

S 3. **Advanced Course.** Credit four hours. Daily except Sat., 8 and 12. GS 164. Mr. ZAPATA.

Entrance credit, one unit.

S 4. **Advanced Translation.** Credit two hours. Daily except Sat., 9. GS 277. Mr. KINGERY.

S 5. **Elementary Composition and Conversation.** Credit two hours. Daily except Sat., 11. GS 281. Assistant Professor CROWELL.

S 7. **Advanced Composition and Conversation.** Credit two hours. Daily except Sat., 11. GS 277. Mr. ZAPATA.

Special attention will be given to free composition and correspondence. The course is conducted in Spanish.

S 10. **The Spanish Short Story.** Credit two hours. Daily except Sat., 9. GS 281. Professor DALE.

Lectures, outside reading, and discussion.

[S 30. **The Teaching of Spanish.** Credit two hours. Daily except Sat., 10. GS 281. Professor DALE.

A course for the discussion of materials and methods in the presentation of Spanish in the secondary schools. Special attention will be given to phonetics, classroom methods, the choice and use of texts, and auxiliary materials.] Not given in 1926.

S 31. **Spanish Composition for Teachers.** Credit two hours. Daily except Sat., 10. GS 281. Professor DALE.

Rapid review of grammar; conversation, free composition, and phonetics. The course is specially designed for those who wish to prepare for the oral credit examination in Spanish of the State Department of Education, which will be given between August 7 and 12.

Spanish Lectures and Readings. A series of lectures and readings in Spanish, by members of the instructing staff will be given during the session.

SUMMER SESSION OF THE LAW SCHOOL

First Term, June 21 to July 28; Second Term, July 29 to September 3.

FACULTY

LIVINGSTON FARRAND, A.B., M.D., L.H.D., LL.D., President of the University.
CHARLES KELLOGG BURDICK, A.B., LL.B., Dean and Professor of Law in the Cornell Law School.

HORACE EUGENE WHITESIDE, A.B., LL.B., Secretary and Assistant Professor of Law in the Cornell Law School.

MORTON CARLISLE CAMPBELL, A.B., LL.D., S.J.D., Professor of Law in the Harvard Law School.

EVERETT FRASER, A.B., LL.B., Dean and Professor of Law in the University of Minnesota Law School.

OLIVER LEROY McCASKILL, Ph.B., J.D., Professor of Procedure in the Cornell Law School.

JAMES JAQUESS ROBINSON, A.B., LL.B., Assistant Professor of Law in the Indiana University School of Law.

ROBERT SPROULE STEVENS, A.B., LL.B., Professor of Law in the Cornell Law School.

GEORGE JARVIS THOMPSON, B.S., LL.B., S.J.D., Professor of Law in the University of Pittsburgh Law School.

WILLIAM REYNOLDS VANCE, M.A., Ph.D., LL.B., Litt.D., Professor of Law in the Yale Law School.

BERTRAM FRANCIS WILLCOX, A.B., LL.B., of the New York Bar.

LYMAN P. WILSON, B.S., J.D., LL.D., Professor of Law in the Cornell Law School.

EDWARD ECKER WILLEVER, LL.B., Librarian.

COURSES OF INSTRUCTION

Contract. Assistant Professor WHITESIDE. Huffcut and Woodruff's *Cases on Contract* (4th ed.). Eight hours a week, both terms. Credit six hours.

Property 1a. Mr. WILLCOX. Warren's *Select Cases on the Law of Property*. Six hours a week, first term. Credit two hours.

Agency. Professor THOMPSON. Huffcut's *Cases on Agency* (3rd ed.). Six hours a week, second term. Credit two hours.

Suretyship. Professor CAMPBELL. Ames's *Cases on Suretyship*. Six hours a week, first term. Credit two hours.

Mortgages. Professor CAMPBELL. Campbell's *Cases on Mortgages*. Six hours a week, first term. Credit two hours.

Trusts. Professor FRASER. Scott's *Cases on Trusts*. Eight hours a week, first term. Credit three hours.

Municipal Corporations. Professor BURDICK. Beale's *Cases on Municipal Corporations*. Eight hours a week, first term. Credit three hours.

Practice. Professor McCASKILL. Selected cases. Eight hours a week, first term. Credit three hours.

Wills and Probate Law. Professor VANCE. Costigan's *Cases on Wills*. Six hours a week, second term. Credit two hours.

Insurance. Professor VANCE. Woodruff's *Cases on Insurance* (2d ed.). Six hours a week, second term. Credit two hours.

Bankruptcy. Professor ROBINSON. Holbrook and Aigler's *Cases on the Law of Bankruptcy*. Six hours a week, second term. Credit two hours.

Partnership. Professor WILSON. Mechem's *Cases on Partnership* (4th ed.). Eight hours a week, second term. Credit three hours.

Private Corporations. Professor STEVENS. Warren's *Cases on Corporations* (2d ed.). Eight hours a week, second term. Credit three hours.

SUMMER SCHOOL OF BIOLOGY

Under the auspices of the New York State College of Agriculture and the Summer Session of Cornell University.

The tuition fee in the Summer School of Biology, regardless of the number of courses taken, is fifty dollars.

STAFF OF INSTRUCTION

HOWARD BERNHARDT ADELMANN, Ph.D., Assistant Professor of Histology and Embryology.

JAMES CHESTER BRADLEY, Ph.D., Professor of Entomology (Taxonomy).

PAUL RUFUS BURKHOLDER, A.B., Assistant in Botany.

OTIS FREEMAN CURTIS, Ph.D., Professor of Botany (Physiology).

ARTHUR JOHNSON EAMES, Ph.D., Professor of Botany (Anatomy).

HARRY MORTON FITZPATRICK, Ph.D., Professor of Plant Pathology (Mycology).

ALLAN CAMERON FRASER, Ph.D., Assistant Professor of Plant Breeding.

WILLIAM ARTHUR HAGAN, D.V.M., Professor of Pathology and Bacteriology.

OSCAR AUGUSTUS JOHANNSEN, Ph.D., Professor of Entomology.

WAYNE EYER MANNING, A.B., Instructor in Botany.

BARBARA MCCLINTOCK, B.S., M.A., Assistant in Botany.

ROBERT MATHESON, Ph.D., Professor of Entomology.

LOREN PETRY, Ph.D., Professor of Botany.

HUGH DANIEL REED, Ph.D., Professor of Zoology.

WILLIAM MITCHELL ROGERS, B.S., Instructor in Histology and Embryology.

WILLIAM CHARLES SENNING, A.B., Instructor in Zoology.

LESTER WAYLAND SHARP, Ph.D., Professor of Botany (Cytology).

JAMES WHAPLES SINDEN, A.B., Instructor in Plant Pathology.

DONALD STUART WELCH, Ph.D., Assistant Professor of Plant Pathology.

KARL MCKAY WIEGAND, Ph.D., Professor of Botany (Taxonomy).

ALBERT HAZEN WRIGHT, Ph.D., Professor of Zoology.

BENJAMIN PERCY YOUNG, Ph.D., Assistant Professor of Zoology.

GENERAL PLANS AND AIMS

The Summer School of Biology was organized to provide instruction of the highest grade in zoology, botany, and allied subjects. All the regular facilities of the University are at the disposal of the student, and as far as possible the staff has been restricted to teachers of professorial rank in the University. The courses are for the most part those given during the regular academic year condensed into a period of six weeks, but not abridged. The work is particularly planned to meet the needs of teachers and graduate students who wish to know, in addition to the subject matter, something of the methods and sources in teaching; but undergraduates also, if sufficiently prepared, will find the courses adapted to their needs. Intensive rather than extensive work is necessarily expected of each student, as the courses are comprehensive. These courses lead toward advanced degrees, and special attention is given to graduate students pursuing research. Students interested in graduate study should, if possible, consult by letter with Professor Wiegand, or the professor concerned, before coming to Ithaca.

The intensive interest in Biology at Cornell University over a period of years has resulted in a wealth of laboratory material. Very extensive and in some cases unique collections of both plants and animals, and a very complete working library, are available to students prepared to make use of them. Ithaca is located in the Finger Lakes region of Central New York, noted not only for its picturesque beauty, but for its richness in biological material of both plants and animals. In this respect the University is perhaps not excelled by any other institution in the country. The collecting grounds are for the most part adjacent to the campus, and can be very readily visited. Within easy reach of the laboratories are freshwater marshes and lakes, salt springs, marl springs, marl bogs, peat bogs, extensive ravines with numerous waterfalls, and upland woods or fields overlying either calcareous or noncalcareous sandy or heavy soils. The country shows a considerable variation in elevation, thus giving samples of several life zones. It is therefore possible to use as illustrative material those inland organisms which may be obtained most readily by teachers throughout the country for use in their own classes.

[A limited amount of change in the hours scheduled may be made by the staff at the beginning of the session to avoid conflicts. In the case of morning laboratories the student may obtain permission, at the option of the instructor, to be absent for a period to attend a lecture in some other course. The time so lost is to be made up later.]

COURSES DEALING PRIMARILY WITH PLANTS

S 1. General Botany. Credit six hours. Equivalent to Botany 1. Lectures M T W Th F, 8-9:30. Laboratory, M T W Th F, 9:30-12:30. One personal conference of half an hour each week, at an afternoon hour arranged in consultation with the student. Occasional field trips, including at least one all-day trip. The afternoons should be reserved for these trips and the conferences. *Stone.* Professor PETRY and Mr. BURKHOLDER.

This course is designed to furnish a general knowledge of the fundamental facts and principles of plant life. A careful study is made of form, structure, and reproduction of representatives from the principal groups, with a view to orient the student in the plant kingdom, and to acquaint him with the principal evolutionary tendencies exhibited. Considerable attention is given to life processes, particularly in the higher plants, and to information necessary in the prosecution of more advanced or practical work connected with plants and animals. Laboratory fee, \$5.

S 2. Plant Physiology. Credit four hours. Equivalent to Botany 31. Prerequisite course 1 or its equivalent, chemistry, and permission to register. Lectures, M T W Th F, 12. Laboratory, T W Th F, 9-12. *Stone.* Professor O. F. CURTIS.

This course is designed to acquaint the student with the general principles of plant growth. Topics such as water-relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, and reproduction are studied in some detail and particular emphasis is placed both in laboratory and classroom on discussions of the principles and their application to growing plants. Laboratory fee, \$4; deposit, \$2.

S 3. Taxonomy of Vascular Plants. Credit four hours. Prerequisite course 1 or its equivalent. Lectures, M T W Th, 8. Laboratory, M T W Th F, 2-5. Several all-day field trips will be arranged. *Stone.* Professor WIEGAND and Mr. MANNING.

A study of the kinds of seed plants and ferns; their classification into genera, families, and orders; and field work on the local flora. Emphasis will be placed on wild plants, but the more common cultivated plants will receive some attention. The course is planned to follow Course 1 and to furnish an introduction to the knowledge of field botany and to the classification of the higher plants in preparation for special work in various departments and as an aid in teaching. Instruction will be given in herbarium methods. Laboratory fee, \$4; deposit, \$3.

S 4. Comparative Morphology of Fungi. Credit four hours. Equivalent to Mycology 121. Prerequisite course 1 or its equivalent and permission to register. Lectures, M T W Th F, 9. *Bailey, West Basement.* Laboratory, fifteen actual hours a week, by arrangement. *Bailey, East Basement.* Professor FITZPATRICK.

An elementary synoptical course designed to acquaint the student with the general field of mycology. Emphasis is placed on morphology and phylogeny, rather than on taxonomy, but abundant opportunity is given for field work. Laboratory fee, \$6; deposit, \$3.

S 5. Plant Anatomy. Credit four hours. Prerequisite course S 1 (Botany 1) or an equivalent and permission to register. Laboratory, M T W Th F, 8-11:30. Hours for lectures and recitations will be arranged during these periods. *Stone.* Professor EAMES.

This course is designed to give a working acquaintance with the internal morphology of vascular plants, and emphasis is placed on practice in interpretation and determination of material. It is planned not only for students desiring training in botany, but also for those in applied fields, such as pathology, pomology, and genetics. Laboratory fee, \$5.

S 10. General Plant Pathology. Credit four hours. Equivalent to Plant Pathology 1. Prerequisite course 1 or its equivalent and permission to register. Lectures, M W F, 7 A. M. Laboratory work; the completion of a minimum of twenty exercises requiring not less than twenty actual hours a week, with personal conferences of half an hour each. Conferences by arrangement. Laboratory at the student's convenience. Assistant Professor WELCH and Mr. SINDEN.

A fundamental course treating of the nature, cause, and control of plant diseases illustrated by studies of the commoner diseases of cultivated crops. Admission limited to twenty students. Laboratory fee, \$4.50; deposit, \$3.

S 19. Special Problems with Plants. Credit two or more hours. Hours to be arranged. In registering for this course the name of the professor with whom the work is to be taken up must be stated.

Students who are sufficiently prepared may arrange to engage in the study of some problem or special topic. Such work may lie in the fields of general or taxonomic botany, anatomy, mycology, cytology, plant physiology, plant pathology, or genetics. A member of the staff must supervise the work.

COURSES DEALING PRIMARILY WITH ANIMALS

S 20. General Zoology (Animal Biology). Credit six hours. Lectures, M T W Th F, 9. *McGraw 5.* Laboratory, M T W Th F, 2-5. *McGraw 2A.* Field studies to be arranged. Professor REED, Assistant Professor YOUNG, and Mr. SENNING.

This course is planned to give a comprehensive view of Animal Biology, taking the living complex animal as the objective of the study. To that end will be considered the principles of structure, function, and origin of animal groups and the application of general biological principles to animal ascent. The study of animals in their relations as living things will be emphasized. Animal types and their classification are employed as a service base from which study may proceed. Laboratory fee, \$3.

S 21. Systematic Vertebrate Zoology and Ecology. Credit four hours. Lectures, Th F, 9 and 12. *McGraw 7.* Laboratory and field work, Th F, 9-12, 2-5, W, 9-1. Some all-day trips are required. Occasionally a field trip 5:30 to 8 A. M. or 5-8 P. M. may be substituted for the regular periods. Professor WRIGHT.

Lectures on fishes, amphibians, reptiles, birds, and mammals: their habits, life-histories, coloration, respiration, locomotion, reproduction, and adaptations;

together with their classification, nomenclature, characters, and relationships. Laboratory study of the parts employed in the classification of these groups, with training in the identification of two hundred and forty North American species. Field work is partly to give practice in field observations and in ready identification of local vertebrates in their natural environment, and partly to introduce some ecological methods. Textbook: Pratt's *Manual of Vertebrates of the United States*. Laboratory fee, \$3.

S 21a. Systematic Vertebrate Zoology and Ecology. Lectures only. Credit one-hour. Prerequisite permission to register. Lectures, Th F, 9 and 12. Professor WRIGHT.

[S 22. Invertebrate Zoology. Credit four hours. Prerequisite Zoology S 20 or its equivalent in a general course in zoology or animal biology. Lectures, M T W Th F, 8. McGraw 5. Laboratory and field work, preferably, M T W Th F, 9-11:30, but in case of necessity these periods may be arranged for other hours. McGraw 2B.] Not given in 1926.

S 23. Zoology and Comparative Anatomy of Vertebrates. Credit four hours. Lectures daily except Sat., 8. McGraw 5. Laboratory fifteen hours a week at times to be arranged. Professor REED, Assistant Professor YOUNG, and Mr. SENNING.

A thorough dissection and study of the several systems of organs in a selected series of vertebrate types. The various systems are considered with reference to their significance in progressive modifications and their bearing upon vertebrate descent. The lectures deal with the problems of comparative anatomy. This course is the equivalent of Animal Biology 11 given during the academic year. Laboratory fee, \$6. This course is given in alternate summers with a course in Animal Physiology.

S 26. Histology. The tissues and their histogenesis. Credit four hours. No prerequisite, but previous work in biology, zoology and botany, or physiology is recommended. See under course S 27 for time. Stimson. Assistant Professor ADELMANN and Mr. ROGERS.

For students of biology or those preparing for medicine. The cell and cellular origin of the body and structure and development of its component tissues. Each student will prepare or receive a series of typical microscopic preparations.

The courses in histology and embryology are given in the histological laboratories in *Stimson Hall*. The department is well equipped for instruction in both subjects, having a large and adequate supply of modern microscopical instruments and an extensive collection of demonstration material for both histology and embryology. Microscopes are furnished by the department. Consultation with the instructors previous to registration is advised. Laboratory fee, \$6.

S 27. Embryology of Vertebrates. Credit four hours. Prerequisite a course in the histology of the tissues or a satisfactory equivalent in other biological work involving training in the use of the microscope. Stimson. Assistant Professor ADELMANN and Mr. ROGERS.

For students of biology or those preparing for medicine. Preparation and study of embryological specimens from all the chief groups of vertebrates. Particular emphasis is placed on the embryology of the chick. The student also acquires a knowledge of special methods useful in embryological work. Laboratory fee, \$6.

The laboratory will be open for work in histology and embryology every morning except Saturday. No formal lectures in histology and embryology are scheduled, since it is planned that the work shall be largely individual, with informal discussions from time to time.

S 30. General Entomology. Credit three hours. Equivalent to Animal Biology 3, or Entomology 12. Prerequisite Biology 1 or Zoology 1 or its equivalent. Lectures, M T W Th F, 10. Practical exercises, M W F, 2-5. Roberts 392. Professor MATHESON.

This course includes lectures and demonstrations on the characteristics of the orders and families of insects, with a study of their habits, life-histories, and

relations to other animals and to plants. The laboratory work consists of the study of the structure, ecology, metamorphosis, and classification of insects. Field trips to study insects in their natural habitats are an important feature. Each student is required to collect and prepare a typical collection of insects. Opportunities are given for the rearing of insects in our Insectary, and special work is offered to suit the needs of individual students. Textbook: Comstock's *An Introduction to Entomology*. Equipment: a good hand lens, several insect cases, insect pins, and labels. These can all be purchased in Ithaca. Laboratory fee, \$2.50.

S 31. Elementary Morphology of Insects. Credit three hours. Equivalent to Entomology 21. Twenty-one actual hours a week, by appointment. *Roberts 391.* Professor JOHANNSEN.

This course deals with the external and internal anatomy of several representative insects as the locust, roach, cicada, honeybee, crane fly, etc. Laboratory fee, \$2.

S 32. Elementary Systematic Entomology. Credit two hours. Equivalent to Entomology 31. Prerequisite course S 31. Fifteen actual hours a week, by appointment. *Roberts 391.* Professor JOHANNSEN.

The principles of wing venation and the classification of the orders and families. Laboratory fee, \$2.

Courses S 31 and S 32 are required of all students who plan to take advanced work in Entomology.

S 33a. Entomotaxy. Credit two hours. Field and laboratory work, M T W Th, 2-5, and additional hours by appointment. *Roberts 301.* Professor BRADLEY.

The methods of collecting and preserving insects; a systematic exploration of various types of environment. Matters of museum technique. Two all-day field trips will be required. Laboratory fee, \$3. Other expenses are the cost of transportation in connection with the excursions, and the cost of equipment and supplies.

S 34. Comparative Anatomy and Histology of Insects. Credit two hours. Prerequisite courses S 31, and S 30 or S 32. Lectures, assigned reading, and reports. Daily except Sat., 9. *Roberts 392.* Professor JOHANNSEN.

This course is the equivalent of the first term of course 20 of former years.

S 35. Histology of Insects. Credit two hours. Must be preceded or accompanied by course 20. Laboratory, fifteen actual hours a week, by appointment. *Roberts 391.* Professor JOHANNSEN.

Technique in histological methods as applied to insects. Laboratory fee, \$4.50.

S 36. General Limnology. Credit three hours. Open to students who have taken courses in general biology or in botany and zoology. Lectures, M T W, 8. *Roberts 392.* Laboratory, M T W, 2-4:30, and one period by appointment. *Roberts 302.* Not given in 1926.

S 39. Special Problems with Animals. Credit two hours or more. Hours to be arranged. In registering for this course the name of the professor with whom the work is to be taken must be stated.

Students who are sufficiently prepared may arrange to engage in the special study of some problem or special topic. Such work may lie in the fields of general zoology, invertebrate zoology, systematic vertebrate zoology, comparative anatomy of vertebrates, ornithology, histology, embryology, general entomology, systematic entomology, economic entomology, or general biology. A member of the staff must supervise the work.

GENERAL COURSES DEALING WITH BOTH PLANTS AND ANIMALS

S 40. Genetics. Credit four hours. Prerequisite elementary botany and plant physiology, or elementary zoology and animal physiology, and permission to register. Courses in cytology and in taxonomic botany and zoology will be found helpful. Lectures, M T W Th F, 8. Laboratory, M W F, 2-4:30. Conferences to be arranged. *Fernow.* Assistant Professor FRASER.

A general introductory course designed to acquaint the student with the fundamental principles of heredity and variation. Special attention is given to the Mendelian interpretations of the facts of inheritance. Among the topics to be discussed are: the physical basis of heredity; simple cases of Mendelian inheritance; factor interaction; the determination of sex; factor linkage; measurement of variation; quantitative inheritance; pure lines; inbreeding and cross-breeding; cytoplasmic inheritance; and mutation; with suggestions as to the relation of genetical principles to eugenics. Laboratory studies of variation and of the laws of heredity as illustrated by hybrid material in plants and by breeding experiments with the fruit fly, *Drosophila*. Laboratory fee, \$3.

S 6. Cytology. Credit three hours. Prerequisite course S 1 (Botany 1) or course S 20 (Zoology 1) or its equivalent, and permission to register. Laboratory, M T Th F, 9-12:30, usually with a conference at 9. *Stone 207*. Professor SHARP.

This course deals with the subject matter, literature, and problems of cytology. The survey of the field is sufficiently inclusive to make the course of value to advanced students in the various branches of biology, while emphasis on certain features gives it a special significance for the geneticist. The conference hour is devoted to a discussion of topics suggested by the laboratory observations and assigned reading, and, during the latter part of the term, to the review of new literature. Laboratory fee, \$5.

S 42. General Bacteriology. Credit four hours. Prerequisite some work in microscopy. Lectures, T W Th F, 9. Laboratory, T W Th F, 10-1. *Veterinary College*. Professor HAGAN.

A general introductory course in bacteriology covering the distribution, morphology, biology, and methods of study of micro-organisms. The latter half of this course is concerned with the bacteriology of water, sewage, milk and milk products, the fermentation industries, and of some of the more important human and animal diseases. The laboratory work is closely correlated with the subject matter of the lectures. After a number of sessions devoted to the development of technique, there follows work on the bacteria of air, water, milk, fermentation processes, and of disease. Laboratory fee, \$10.

METHODS

Arrangements can be made, contingent upon the time of the instructor, for additional instruction in biological technique. This may include instruction in methods of collecting and preparing laboratory and museum material, the technique of hybridization, etc.

RESEARCH

In addition to the various professors named as directly connected with the Summer School of Biology, other professors who may be in residence during the summer will supervise graduate students engaged in research: Professors KNUDSON and MUENSCHER in Botany; Professors BLODGETT, BURKHOLDER, WHETZEL, MASSEY, REDDICK, and THOMAS in Plant Pathology; Professor CLAASSEN in Biology; Professor EMBODY in Aquiculture; Professor ALLEN in Ornithology; and Professors BUSSELL, EMERSON, LOVE, and WIGGINS in Plant Breeding and Genetics.

OTHER COURSES

Besides the courses here included in the Summer School of Biology, several other courses dealing with plants and animals are given in the summer, and may be found described elsewhere in this pamphlet.

SUMMER SCHOOL OF AGRICULTURE

IN THE NEW YORK STATE COLLEGE OF AGRICULTURE

OFFICERS

LIVINGSTON FARRAND, A.M., M.D., L.H.D., LL.D., President of the University.
 ALBERT RUSSELL MANN, B.S.A., A.M., Dean of the College of Agriculture,
 Director of the Experiment Station, and Director of Extension. Abroad as
 representative of the International Education Board.
 CORNELIUS BETTEN, Ph.D., D.Sc., Director of Resident Instruction and Acting
 Dean.
 GEORGE ALAN WORKS, Ph.B., M.S.A., Ed.D., Professor of Rural Education,
 Director of the Summer School.
 ROBERT PELTON SIBLEY, M.A., L.H.D., Professor and Secretary.

STAFF OF INSTRUCTION

CHARLES JOSEPH ANDERSON, Ph.D. Rural Education
 (Assistant State Superintendent, Madison, Wisconsin)
 ARTHUR AUGUSTUS ALLEN, A.B., M.A., Ph.D. Ornithology
 (Professor of Ornithology)
 ELSA GUERDRUM ALLEN, A.B. Ornithology
 (Instructor in Ornithology)
 THOMAS LEVINGSTON BAYNE, Jr., M.S. Rural Education
 (Instructor in Rural Education)
 CHARLES O. BEAMAN, B.S. Nature Study
 (Head of Department of Natural Science, Brockport Normal School)
 JAMES CHESTER BRADLEY, Ph.D. Entomology
 (Professor of Entomology and Curator of Invertebrate Zoology)
 ROBERT CLAUDE BRADLEY, A.B., B.S., B.S. in Ed., M.S. Poultry
 (Instructor in Poultry Husbandry)
 LENOIRE BURNSIDE, Ph.D. Home Economics
 (Assistant Professor of Home Economics)
 JULIAN EDWARD BUTTERWORTH, Ph.D. Rural Education
 (Professor of Rural Education)
 ELVA CAMPBELL, B.S. Home Economics
 (Instructor in Home Economics)
 PETER WALTER CLAASSEN, Ph.D. Biology
 (Assistant Professor of Biology)
 ANNA BOTSFORD COMSTOCK, B.S. Nature Study
 (Emeritus Professor of Nature Study)
 EMMA CONLEY. Rural Education
 RALPH WRIGHT CURTIS, M.S.A. Floriculture and Ornamental Horticulture
 (Professor of Ornamental Horticulture)
 MARJORY CUTLER. Home Economics
 (Assistant Nursery School Teacher)
 MARY EVA DUTHIE, B.S. Rural Social Organization
 (Instructor in Rural Social Organization)
 LIDA B. EARHART, A.B., A.M., Ph.D. Rural Education
 (Sometime Professor of Elementary Education, University of Nebraska)
 THEODORE HILDRETH EATON, M.A., Ph.D. Rural Education
 (Professor of Rural Education)
 GEOGRE CHARLES EMBODY, Ph.D. Entomology
 (Professor of Aquiculture)

- FRANK LATTI FAIRBANKS, M.E. Rural Engineering
(Assistant Professor of Rural Engineering)
- RALPH ALMON FELTON, M.A. Rural Social Organization
(Extension Professor of Rural Social Organization)
- EMERY N. FERRISS, Ph.D. Rural Education
(Professor of Rural Education)
- ALBERT MARTIN FIELD, B.S., M.S. Rural Education
(Professor in Agricultural Education, University of Minnesota)
- V. B. HART, Ph.D. Agricultural Economics and Farm Management
(Extension Assistant Professor of Farm Management)
- OLIVE M. HOEFLE, B.S. Nature Study
(Instructor in Nature Study, Roger Williams Park Museum,
Providence, R. I.)
- EDWIN RAY HOSKINS, B.S. Rural Education
(Instructor in Rural Education)
- RALPH SHELDON HOSMER, B.A.S., M.F. Forestry
(Professor of Forestry)
- LEE SISSON HULTZEN. Rural Social Organization
(Late Assistant Professor of Public Speaking, Washington University)
- OSKAR AUGUSTUS JOHANNSEN, Ph.D. Entomology
(Professor of Entomology)
- ELLIS LORE KIRKPATRICK, B.S., M.S., Ph.D. Rural Social Organization
(Associate Research Analyst, Bureau of Rural Economics,
U. S. Department of Agriculture)
- PAUL J. KRUSE, Ph.D. Rural Education
(Professor of Rural Education)
- EVA MAY LUSE, B.A., M.A. Rural Education
(Head of Department of Teaching, Iowa State Teachers' College)
- JOHN CLARENCE MCCURDY, B.S., C.E. Rural Engineering
(Professor of Rural Engineering)
- LAURENCE HOWLAND MACDANIELS, Ph.D. Pomology
(Professor of Pomology)
- ROBERT MATHESON, Ph.D. Entomology
(Professor of Economic Entomology)
- BRUCE LEE MELVIN, B.S., M.A., Ph.D. Rural Social Organization
(Acting Professor of Rural Social Organization)
- LUA ALICE MINNS, M.S. in Agr. Floriculture and Ornamental Horticulture
(Instructor in Floriculture)
- HELEN MONSCH, B.S., M.A. Home Economics
(Professor of Home Economics)
- CLYDE B. MOORE, M.A., Ph.D. Rural Education
(Professor of Rural Education)
- RICHARD ALAN MORDOFF, Ph.D. Meteorology
(Professor of Meteorology)
- WALTER CONRAD MUENSCHER, Ph.D. Botany
(Assistant Professor of Botany)
- JACOB S. ORLEANS, Ph.D. Rural Education
(New York State Department of Education)
- E. LAURENCE PALMER, Ph.D. Rural Education
(Professor of Rural Education)
- GEORGE ERIC PEABODY, M.S. Extension Teaching
(Instructor in Extension Teaching)
- FRANK ASHMORE PEARSON, Ph.D., Agricultural Economics and Farm Management
(Professor of Marketing)

NELLIE PERKINS, Ph.D.	Home Economics (Professor of Home Economics)
MILES DAVID PIRNIE, B.S.	Ornithology (Instructor in Ornithology)
JOSEPH PULLMAN PORTER, M.L.D.	Floriculture and Horticulture (Extension Assistant Professor of Ornamental Horticulture)
EARL E. RAMSEY, A.B., M.A.	Rural Education (Associate Professor, Indiana State Normal School, Terre Haute, Indiana)
LOUIS MICHAEL ROEHL, B.S.	Rural Engineering (Assistant Professor of Farm Shop)
HARRY ALBERT ROSS, Ph.D.	Agricultural Economics and Farm Management (Assistant Professor of Marketing)
JAMES MORGAN SHERMAN, M.S., Ph.D.	Dairy Industry (Professor of Bacteriology)
RAY P. SNYDER	Rural Education (Chief, Rural Education Bureau, New York State Department of Education)
WILLIAM JASPER SPILLMAN, M.S., D.Sc.	Farm Management (Professor of Farm Management)
ROLLAND MACLAREN STEWART, Ph.D.	Rural Education (Professor of Rural Education)
LAURENCE PAUL WEHRLE, Ph.D.	Biology (Instructor in Biology)
FLORENCE E. WINCHELL, A.M.	Rural Education (Head of Department of Home Economics, New York State College for Teachers)
PAUL WORK, B.S., Ph.D.	Vegetable Gardening (Professor of Vegetable Gardening)
GEORGE ALAN WORKS, Ph.B., M.S.A., Ed.D.	Rural Education (Professor of Rural Education)

COURSES IN THE COLLEGE OF AGRICULTURE

The New York State College of Agriculture provides courses of instruction under the rules and regulations that follow:

1. **Admission.** The Summer School in the College of Agriculture is designed to meet the needs of persons engaged in educational work, including teachers, supervisors, superintendents, extension workers, and others.

2. **Tuition and Fees.** Tuition in any of the courses following is free to admitted students who are residents of New York and who have been residents for at least one year immediately preceding registration. An incidental fee of ten dollars is, however, charged to all students. Students from outside of the State of New York, whether they take one subject or more, will pay \$50, in which is included the incidental fee. For the time and place of payment see page 13.

In certain courses laboratory fees are charged. These are indicated in connection with the courses. Fee cards must be procured from the instructor at the first exercise, and must be returned to him receipted within five days.

A fee of two dollars is charged to all summer students for the privileges of Willard Straight Hall. See page 18.

3. **Academic Credit for Work.** A student who has previously satisfied the entrance requirements of the College may obtain credit for work in a Summer School up to a limit of eight hours. Residence credit will be given if six hours are passed, but not more than a total of two terms of residence may be obtained by attendance at Summer Schools.

The demand for some courses is not great enough to justify offering them every year. For this reason certain departments of the college offer instruction only in alternate years. For the requirements of the degree B.S. (eight terms, 120 hours, etc.) see the Announcement of the College of Agriculture.

Summer Term. The Summer Term of twelve weeks formerly conducted in this college has been discontinued and additional courses are now offered in the Summer School of Agriculture.

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

S 102. Farm Management. Credit three hours. Lectures, daily except Sat., 11. Laboratory, T, 2-4:30; S, all day. *Farm Management* 102. Assistant Professor HART.

This course is designed for advanced and graduate students. Undergraduates must receive permission to register. It should be preceded by economics and as many as possible of the courses dealing with the production of crops and animals.

Lectures, recitations, and laboratory practice. Farming as a business; types of farming; balance of business; size of business; rates of production; farm layout; building arrangement; labor management; machinery; marketing; ways of beginning a farm; forms of tenure and leases; choosing and buying a farm; use of capital and credit; planning, organization, and management of specific farms. Field trips on Saturday beginning at 8 A. M. One of the trips will require two days. Laboratory fee, \$2.

S 202. Advanced Farm Management. Credit three hours. Lectures, daily except Sat., 10. Laboratory, T Th, 4:30-5:30. *Farm Management* 102. Professor SPILLMAN.

S 111. Agricultural Statistics. Credit two hours. Lectures, T Th, 8. *Farm Management* 102. Laboratory, M Th, 2-4:30. Professor PEARSON.

A study of the principles involved in the collection, tabulation, and interpretation of agricultural statistics. This course is designed for students who expect to do research. Laboratory fee, \$3.

S 115. Agricultural Prices. Credit two hours. Lectures, M W, 8. Laboratory, W F, 2-4:30. *Farm Management* 102. Professor PEARSON. Laboratory fee, \$3.

S 116. Agricultural Prices, Advanced Course. Credit one hour. Lecture, F, 8. Laboratory by assignment. *Farm Management* 102. Professor PEARSON.

S 143. Marketing Dairy Products. Credit three hours. Lectures, daily except Sat., 9. Laboratory, M Th, 2-4:30. *Marketing* 42. Assistant Professor Ross.

A study of the economic factors involved in the marketing of dairy products, with special attention to fluid milk. Exchanges; storage; foreign trade; relation of various products; analysis of supply and demand; surplus; economic basis of prices; methods of price determination; types of marketing organizations; sales methods; and efficiency factors.

The statistical method of studying marketing problems will be emphasized throughout the course. Laboratory fee, \$2.

S 168. Public Problems of Agriculture. Credit one or two hours. Lectures, M W F, 12. *Roberts* 131. Discussion period, M W F, 4:30. *Farm Management* 102. Credit one hour for those who take the 12 o'clock lectures only. The dis-

cussion periods are primarily for graduate students and are more technical. Credit two hours for those who take both periods. Professor PEARSON and Assistant Professor ROSS in charge.

A series of lectures intended to give a brief survey of some of the outstanding economic, social, and educational problems of agriculture. Among the speakers will be agricultural leaders of national prominence.

AQUICULTURE

S 73. Aquiculture. Credit three hours. Lectures, T W Th, 9. *Roberts 392.* Laboratory and field work, T Th, 2-5. *Experimental Hatching Station.* Professor EMBODY.

The lectures will treat the methods used in governmental and private commercial hatcheries for propagating useful aquatic organisms, more especially the food, game, and ornamental fishes.

The laboratory and field work is designed to give acquaintance with certain aquatic organisms involved in the propagation of fishes, their environmental requirements, and the cultural procedure. Laboratory fee, \$2.

BACTERIOLOGY

S 1. General Bacteriology. Credit two or four hours. Lectures, M T W Th F, 2. Laboratory, M T W Th F, 3-5. *Dairy 119.* Professor SHERMAN.

An introductory course giving a general survey of the field of bacteriology together with the fundamentals essential to further work in the subject. Laboratory fee, \$10.

BIOLOGY

S 1. General Biology. Credit three hours. Lectures and recitations, daily except Sat., 9. *Roberts 392.* Laboratory and field work, M W F, 2-4:30; other sections by special appointment. *Roberts 302.* Assistant Professor CLAASSEN and Dr. WEHRLE.

This course is designed to acquaint the general student and the prospective teacher with the main ideas of biology through selected practical studies of the phenomena on which biological principles are based. Lectures, laboratory work, and field trips will deal with such topics as: interdependence of organisms as illustrated by insects and flowers, insects and galls, etc.; the simpler organisms, such as amoeba, paramoecium, flagellates, and other protozoans; and algae, fungi, bacteria, and slime molds among plants. The study of these simpler organisms will be followed by studies of such plant types as liverworts, mosses, and ferns, and such animal types as hydra, earthworm, and frog. Students completing this course will be given credit for the first term's work in Biology 1 of the regular academic year. Laboratory fee, \$2.50.

S 2. Laboratory Methods in Biology. Credit one hour. Conferences and laboratory work, M W, 10-12:30. *Roberts 302.* Assistant Professor CLAASSEN and Dr. WEHRLE.

This course is open only to teachers of Biology who have had considerable training in biological sciences. Instructor's permission necessary for registration.

This course takes up the problem of laboratory technique, the collection and preservation of class material, the general equipment of the laboratory, and other questions encountered in the management of a laboratory. Teachers who wish to study methods of teaching are referred to Course S 139 in Rural Education and Course S 1 in Forestry.

BOTANY

S 13. Trees and Shrubs. Credit two hours. Lectures, Th, 2. Laboratory or field work, T, 2-5, Th, 3-5; also M W, 2-5, if sufficient students register. *Stone.* Assistant Professor MUENSCHER.

A course intended for those who wish to know the woody plants in the field. The aim is to familiarize the student with as many as possible of the trees and

shrubs of the Cayuga Lake flora and to teach the main facts of structure, growth, habit, and distribution concerning them. Some all-day trips will be required. Laboratory fee, \$1.50; deposit, \$3.

Other courses in the biological sciences are offered in the Summer School of Biology; see page 49.

ENTOMOLOGY

S 12. General Entomology. Credit three hours. Identical with S 30 in the Summer School of Biology. Prerequisite Biology 1, or Zoology 1 or its equivalent. Lectures, M T W Th F, 10. Practical exercises, M W F, 2-4:30. *Roberts 392.* Professor MATHESON.

This course embraces lectures and demonstrations on the characteristics of the orders and families of insects: their habits, life-histories, and relations to other animals and to plants; methods of rearing, studying, collecting, and mounting insects.

The laboratory work will consist in the study of the structure, ecology, metamorphoses, and classification of insects. Field trips to study insects in their natural habitats will be an important feature. Each student will be required to collect and prepare a typical collection of insects. Opportunity will be given for the rearing of insects in our Insectary and special work to suit the needs of students will be offered. Textbook, Comstock's *An Introduction to Entomology*. Equipment: A good hand lens, several insect cases, insect pins, and labels. These can all be purchased at Ithaca. Laboratory fee, \$2.50.

S 21. Elementary Morphology of Insects. Credit three hours. Identical with S 31 in the Summer School of Biology. The work is individual; twenty-two actual hours a week in the laboratory at times to be arranged. In this course the external anatomy of a number of insects (locust, bee, cicada, ground beetle, etc.) is studied as well as the internal anatomy of some large representative species. *Roberts 391.* Professor JOHANNSEN. Laboratory fee, \$2.

S 31. Elementary Systematic Entomology. Credit two hours. Identical with S 32 in the Summer School of Biology. The work is individual; fifteen actual hours a week at times to be arranged. Prerequisite Course 21. The aim of this course is to acquaint students with the external structure of insects for the purpose of identification of the commoner families. *Roberts 391.* Professor BRADLEY. Laboratory fee, \$2.

Courses 21 and 31 are required of all students who plan to take advanced work in Entomology.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

S 1. Woody Plant Propagation and Nursery Work. Credit one hour. Lectures, Th, 12, F, 10. Laboratory, S, 8-1. Laboratory fee, \$3. *Floriculture and Nursery.*

This course considers the methods of propagation of all classes of ornamental woody plants and their special treatment during the first stages of growth. It also acquaints the students with the principles governing the transplanting of trees, shrubs, and herbaceous perennials and with the methods practiced in all types of commercial nursery management. Must be accompanied by S 3, S 4, and S 5.

S 2. Garden Flowers. Credit one hour. Lectures, M F, 11. Laboratory, M, 2-5. *Greenhouses.* Miss MINNS.

This is designed as an elementary course of value in home flower garden or school garden work. It is outlined so as to acquaint students with the most valuable material for this work, and to cover, as time may permit, methods of propagation and culture. Laboratory fee, \$1.50.

S 3. Landscape Planting. Credit one hour. Lectures, Th, 10. Practice, Th, 2-5, W, 10-1. Should be accompanied by S 6. *Caldwell 400. Greenhouses and Campus.* Assistant Professor PORTER.

A brief course intended to familiarize the student with the best trees, shrubs, and vines for landscape work. Names, characteristics, and requirements will be

studied in the field and in the laboratory. The lectures will deal with planting practices and the selection and arrangement of plants. Laboratory fee, \$1.50.

S 4. Landscape Planning. Credit two hours. Lectures, W, 9, T, 12; Consultation, F, 8-10. Drafting, three hours by appointment. Should be accompanied by S 6. Registration limited to 16. *Caldwell 400.* Assistant Professor PORTER. Not a professional course.

A discussion of the fundamental principles involved in landscape planning as related to the home grounds, school grounds, and village improvement work. A brief course intended for students who desire an intelligent point of view but who do not intend to take technical courses. Laboratory fee, \$1.

S 5. Indoor Flower Growing. Credit one hour. Lectures, T Th, 11. Laboratory, T, 2-5. *Greenhouses.* Miss MINNS.

The propagation and culture of plants suitable for winter gardens in school-rooms, including a study of containers, soils, fertilizers, insecticides. The selection of varieties of bulbs and their methods of culture indoors are considered, as are also the method of propagation and general care of species of plants suited for indoor culture.

S 6. Garden Flowers. Credit two hours. Lectures, M T Th, 9. Laboratory, W F, 2-5. *Greenhouses and Gardens.* Miss MINNS. Laboratory fee, \$2.

This course, planned primarily for graduate and advanced students in floriculture and ornamental horticulture, comprises a study of herbaceous plant materials. The aim is to give the student such an intimate knowledge of these forms of plants as may be used in garden planting, either on home grounds, rural social centers, or public parks, more particularly with reference to summer conditions. Students must have had sufficient botany to be familiar with the botanical characters and classification. An excellent collection of plant material is available for demonstrations. All members of the class will participate in an excursion to the Thompson Estate at Canandaigua on August 13.

S 8. Woody Plant Materials for Landscape Planting. Credit three hours. Lectures, M T W Th, 8. Laboratory and field-trip, M W, 10-12:30; T Th, 10-12; M T, 2-4:30. *Greenhouses and Campus.* Professor CURTIS and Assistant Professor PORTER. Intended for graduate students and advanced students in floriculture and ornamental horticulture. Laboratory fee, \$2.

A study of the characteristics and requirements of trees, shrubs, and vines, for landscape planting. The laboratories and field trips enable the student to recognize common woody plants. The lectures discuss planting areas, planting practices, and plant materials, in order that the student may learn to see plants not only as growing things but as possible units in designs with which he may be able to improve his surroundings. All members of the class must participate in an excursion to Rochester and Buffalo on August 14 and 15 to visit private estates and public parks.

FORESTRY

S 1. Forest Trees. Credit one hour. T Th, 8. Field work, W, 2-4:30. *Fernow 122.* Professor HOSMER.

This course lays emphasis on simple means of identification of the principal forest trees of this region. It includes a study of the characteristics of forest trees which may be observed at various seasons of the year. Some attention will be given to the identification and the commercial uses of a few of the principal kinds of woods. Field work supplements the work in the lecture room. This course should be helpful to teachers in connection with their work in nature study and biology. See Biology S 2 and Nature Study S 139.

S 2. Forests and Forestry. Credit two hours. Lectures, M T W F, 9. Field work, Th, 2-4:30. *Fernow 122.* Professor HOSMER.

This course will carry forward the foundation work of Forestry S 1. It presupposes a working knowledge of the native trees. The two courses, while independent, are supplementary to each other. Forestry S 1 is not a prerequisite.

Topics to be considered: the nature and scope of forestry; methods employed in the perpetuation of forests; the economic importance of forests to the nation,

including influence on stream flow and the relation of the forest to recreation, with special application to New York State; brief description of the forest regions of the United States; present status of Federal, State, and private forestry. The lectures will embody suggestions as to the use by teachers of certain of the subject matter in their school courses in geography.

As far as is possible, the lectures are followed by opportunities to make special observations in the field.

HOME ECONOMICS

Students desiring to take laboratory as well as lectures in child feeding, child training, and child hygiene are advised to write ahead and confirm their registration, since the facilities of the nursery school make it necessary to limit the number of students in the laboratory part of these courses to twenty.

FOODS AND NUTRITION

S 35. Elementary Nutrition and Dietetics. Credit two hours. Lectures and discussions, daily except Sat., 2. *Home Economics* 245. Miss CAMPBELL.

This course aims to give the student a thorough knowledge of the value of the different food groups; of how to include these foods in order to make adequate diets; a study of quantitative standards of certain food stuffs, with practical methods of measuring them in the diet; normal digestion; principles determining methods of feeding in certain common digestive disorders; the economical expenditure of money for food. Fee for mimeographed material, \$.50.

S 131. Child Feeding. Credit two or three hours. Prerequisite previous courses in nutrition and dietetics. Lecture and discussion, daily except Sat., 2. Practice, twice a week, hours to be arranged. *Home Economics* 100. Professor MONSCH and Miss CAMPBELL.

The aim of this course is to give to students having previous education in nutrition and dietetics, the applications which may be made of such education to the problems of child feeding. It includes a study of the relationship of correct diet to the health of children during infancy and in pre-school and school years; the best methods of securing good food practices with children and the effects such practices have on producing healthy adults. Laboratory fee, \$7.50. Fee for mimeographed material, \$.50.

FAMILY LIFE

S 101. Child Training. Credit two or four hours. Not open to undergraduate students except by special permission. Prerequisite Rural Education 115 or the equivalent. Laboratory limited to twenty students. Lectures, daily except Sat., 8, two hours' credit. *Home Economics* 245. Ten hours in laboratory to be arranged, two hours' credit. *Nursery School*. Professor PERKINS and Dr. BURNSIDE.

The lectures and laboratories cover the care and management of young children. Special emphasis will be placed on the emotional life of the child and on the importance of habit-training and character-building in the early years. Laboratory fee, \$.5. Fee for mimeographed material, \$.50.

S 103. Nursery School Technique. Credit two hours. Prerequisite Educational Psychology and Child Training S 101. One lecture and ten hours in laboratory to be arranged. *Nursery School*. Professor PERKINS, Dr. BURNSIDE, and Miss CUTLER.

The lectures and demonstrations will cover the use of educational apparatus, play equipment, stories, music, and games for the pre-school child. Laboratory fee, \$.5. Fee for mimeographed material, \$.50.

S 105. Advanced Problems in Child Training. Credit two to four hours. Prerequisite Educational Psychology and Child Training 101. Lectures, T Th 3-5, two hours' credit, *Nursery School*. Ten hours in laboratory to be arranged, two hours' credit, *Nursery School*. Professor PERKINS.

The course consists of lectures, round table discussions, and observations of young children at play and at work under conditions adapted to meet the needs of normal childhood. Laboratory fee, \$.5. Fee for mimeographed material, \$.50.

S 125. **Child Hygiene.** Credit one or two hours. Lectures, M W F, 3. *Home Economics* 100. One laboratory period to be arranged. Dr. ———.

The aim of this course is to give the student a knowledge of the characteristics of the healthy child and of the factors making for positive health, of the common diseases, physical defects, and disturbances which should have medical attention; of the relation of child health and hygiene to the other trends making for better children. Laboratory fee, \$3. Fee for mimeographed material, \$.50.

METEOROLOGY

S 1. **Meteorology and Climatology.** Credit two hours. Lectures and discussions, daily except Sat., 10. *East Roberts* 222. Professor MORDOFF.

This course is adapted to the needs of teachers and students of subjects in which weather and climate are important factors, particularly teachers of physical geography and general agriculture. It is designed to acquaint the student with the laws governing the primary and secondary circulation of the atmosphere and with the development, progression, and conditions that attend cyclones, tornadoes, and other atmospheric phenomena. Attention is given to the principles and practice of weather forecasting from weather maps and from local observations.

S 2. **Meteorology and Climatology, Laboratory Course.** Credit one hour. W F, 2-4:30, or other periods to be arranged. Must be accompanied by Course S 1. *East Roberts* 341. Professor MORDOFF.

The work consists in the study of the principal weather and climatic elements with the aid of maps, charts, and instruments. The various meteorological instruments will be studied, as well as the methods of taking and recording the observations.

NATURE STUDY

S 2. **Nature Literature.** Credit two hours. Lectures, M W F, 12. Laboratory periods to be arranged. *Roberts* 252. Professor COMSTOCK.

Only those who have had course S 7a or its equivalent are eligible. The course includes discussions of nature study reference books, nature story writers, and nature essayists and poets.

S 7a. **General Nature Study.** Credit two hours. Lectures, M W F, 10. *Fernow* 122. Field and laboratory observations, T Th, 10-12:30, or 2-4:30, *Fernow* 8. Professor PALMER, Professor COMSTOCK, Mr. BEAMAN, and Miss HOEFLE.

To acquaint teachers with the principles and methods of education through nature study and to give them practice which will permit them to carry on the work independently. As many as possible of the laboratory periods will be spent in the fields in the study of birds, trees, plants, and insects; students expecting to take the course should keep this feature in mind. The program adopted by the *Cornell Rural School Leaflet* since January, 1920, will be followed in lectures and the exercises will include practical methods for conducting nature study in graded and ungraded elementary schools.

S 139. **Science in the Rural Secondary Schools.** Credit two hours. Daily except Sat., 9. *Fernow* 16. Professor PALMER.

A study of the science program in rural high schools; the functions of the recognized high school sciences such as general science, biology, zoology, physics, chemistry, and physical geography, together with methods of teaching. Designed primarily for experienced teachers. Teachers will find it useful in connection with this course to take in addition at least one hour's work in Forestry S 1 and in Biology S 2, where problems in laboratory practice and technique will be presented.

ORNITHOLOGY

S 11. **Ornithology.** Credit three hours. Lectures, M W F, 11. *McGraw* 5. Laboratory, M W, 2-5, or T Th, 2-5. Field work, M W, or T Th, 5:30-8 A. M. Professor ALLEN, Mrs. ALLEN, and Mr. PIRNIE.

This course gives an introduction to the study of birds and familiarity with the local species. The lectures cover such subjects as classification, migration, coloration, song, nest-building, eggs, care of young, methods of attracting birds, and economic importance. The laboratory work with bird skins gives an intimate knowledge of the birds of Eastern North America and familiarity with the use of a manual. The aim of the field work is the identification of birds by their songs, as well as by their plumage and habits. Each student should be provided with Chapman's *Handbook of Birds of Eastern North America* and with field or opera glasses. Laboratory fee, \$2.

S 131. Applied Ornithology. Credit two hours. Lectures, laboratory, and field work. T Th, 2-5, and other hours by appointment. *McGraw*. Open only to those who are taking the elementary course or who have had its equivalent. Professor ALLEN.

This course is intended to meet the needs of teachers or students who plan further study of ornithology. The lectures cover the field open to prospective ornithologists, methods of teaching, preparation of specimens and lantern slides, bird photography, wild life conservation, and game farming. The laboratory and field work will give practical exercises. Laboratory fee, \$2.

POMOLOGY

1. General Pomology. Credit three hours. Lectures, daily except Sat., 10. *East Roberts* 108. Laboratory, W and F, 2-4:30. *East Roberts* 108. Professor MACDANIELS.

A study of the general principles and practices in pomology; propagation and care of orchard trees and small fruits; harvesting, storing, and marketing fruit. Practical work in budding, grafting, pruning, and planting; study of varieties, growth, and fruiting habits. Laboratory fee, \$2; deposit, \$1, to be refunded provided all tools lent to the student are returned in good condition.

POULTRY HUSBANDRY

S 1. Principles and Practice of Poultry Management. Credit five hours. Lectures, daily, 8. *Poultry* 325. Laboratory, T Th F, 2-4:30. *Poultry* 300. Mr. BRADLEY.

Designed primarily for teachers in agricultural high schools and other secondary agricultural schools. The course consists of thirty-six lectures and preliminary examinations, and eighteen laboratory practice periods; and includes a general discussion and practical application of the principles of incubation; brooding; rearing; feeding; illumination; breeding for constitutional vigor and egg production; sanitation and disease; marketing; housing; and general poultry farm management.

Feeding, incubating, brooding, and marketing practice three times daily by appointment, morning, noon, evening. *Poultry Auxiliary Buildings*. Practice in feeding for egg production and for fattening includes the preparation for market, record keeping, and general care and management of fowls. Practice in incubating includes operation of incubators, disinfection, record keeping, and general management of the hatch. Brooding practice includes feeding, brooding, caring for young chicks, keeping of temperature, food, and growth records. Marketing practice includes cleaning, testing, grading, packing, and shipping eggs, and preparing poultry for market. Laboratory fee, \$5.

PUBLIC SPEAKING

S 100. Oral Expression. Credit two hours. Lectures and practice, daily except Sat., 10. *Roberts* 131. Criticism by appointment, daily 8-1. Registration limited to twenty-five students. Open only to upperclassmen and regular summer school students. Mr. PEABODY.

Practice in oral and written presentation of topics in agriculture, with criticism and individual appointments on the technique of public speech. Designed to acquaint students with parliamentary practice, to encourage interest in public affairs, and, through demonstrations and the use of graphic material and other forms, to train for effective self-expression in public.

RURAL EDUCATION

PSYCHOLOGY

S 111a. Educational Psychology. Credit two hours. Daily except Sat. Section I, 11, *Caldwell* 143. Section II, 8, *Caldwell* 143. Section III, 11, for training-class teachers, *Caldwell* 250. Professor KRUSE, Dr. LUSE, and Mr. BAYNE.

The original nature of man; individual differences; the nature of learning; progress in learning; transfer of learning; such special phases of learning as habit formation, memorizing, and controlled thinking.

S 111b. Educational Psychology. Credit two hours. M W F, 7:30-9 A. M., *Caldwell* 250. Professor KRUSE. Prerequisite S 111a, or its equivalent. Students who have not had S 111a should confer with the instructor before registering for this course.

Following the argument of S 111a, more extended treatment will be given to selected topics in the psychology of learning, such as special aspects of the laws of learning; trial and error in learning; the conditioned response; controlled thinking.

S 115. Psychology. Credit two hours. Daily except Sat., 11. *Marketing*. Dr. ORLEANS.

A beginning course in psychology designed for students of child training and for teachers of the primary and intermediate grades. A study of original nature, learning and habit formation, attention, memory, etc., will be made in relation to the development of the child. Observation of children will be made in connection with the course.

METHODS

S 121. Principles of Teaching. Credit two hours. Daily except Sat. Section I, 10, *Caldwell* 143, for students interested in teaching in the elementary school. Dr. EARTHART; Section II, 11, *Caldwell* 100, for students interested in teaching in the high school. Mr. RAMSEY; Section III, 3, *Caldwell* 250, for training-class teachers. Dr. LUSE.

A consideration of the problems of teaching; how to motivate study, cultivate interest, organize teaching materials, select and solve problems, plan class procedure, construct and use questions, drill, measure the results of teaching, etc., to make clear the principles which are fundamental to efficient instruction.

S 123. Teaching the Elementary School Subjects. Credit two hours. Daily except Sat., 2. *Caldwell* 143. Dr. EARTHART.

A course for experienced teachers and supervisors. Attention will be given to recent studies and research in arithmetic, handwriting, drawing, practical arts, hygiene, physical education, spelling, English. Emphasis on the various topics will depend upon the interests and needs of the class. Reading and the social studies will be given special attention during the summer session of 1927.

S 226. Principles of Supervision. Credit two hours. Daily except Sat., 9. *Caldwell* 492. Professor MOORE.

This course is designed for supervisors and for experienced teachers who expect to do supervisory work. It will include a consideration of the nature and purpose of supervision; the improvement of the learning and teaching process; skill in observation; analysis of methods; relationships between general and specific objectives; selection, analysis, and organization of subject matter; measuring and testing results; assisting teachers in professional growth. The experience and needs of the class will determine the emphasis and nature of treatment of the various aspects of the course.

S 236. Problems of Extension Teaching. Credit two hours. Open to graduate students who have completed course 211 or its equivalent, and to seniors who have completed course 111 or its equivalent. Observation of extension work is a required part of the course. Lectures, daily except Sat., 10. *Caldwell* 492. Professor EATON.

The course will consist in a study of the problems of college extension work in agriculture and homemaking, its aims, organization, and methods.

S 132. The Teaching of Agriculture in the High School. Credit two hours. Daily except Sat., 9. *Caldwell* 282. Designed for teachers of agricultural courses or for students preparing to teach such courses. Professor STEWART.

A study of the problems confronting the teacher of agriculture; the vocational point of view in instruction; determination of courses of study; making up the agricultural part of the curriculum; forms of teaching, including a consideration of the use of the project and the survey; the selection and utilization of textbooks, materials, and equipment; the organization of materials of instruction in agricultural courses; the relationships of the teacher to other agencies.

S 132a. The Teaching of Agriculture in the High School. Credit one hour when accompanying S 132. Lectures, T Th, 2-4:30. *Caldwell* 282. Professor STEWART.

The use of the laboratory and the field trip to observe, demonstrate, or practice certain principles involved in the training of teachers of agriculture. Problems arising in S 132 will come from the basis of such consideration.

S 136. Teaching Home Economics in the Secondary School. Credit four hours. Daily except Sat., 9 and 11. *Home Economics* 100. Miss WINCHELL.

This course is particularly concerned with modern methods of education as related to home economics and is designed to assist teachers in improving their methods of teaching. Consideration will be given to problems involved in the determination and construction of home economics curricula designed to meet the needs and interests of elementary and secondary school pupils, both vocational and elective; for part time and continuation schools; analysis of teaching steps in type units of given courses; teaching plans, individual instruction sheets; modern teaching methods; measuring and evaluating the progress of pupils; home projects; coordinating class work with homemakers' interests; coordinating home economics with related art and science.

S 139. Science in the Rural Secondary Schools. Credit two hours. Daily except Sat., 9. *Fernow* 16. Professor PALMER.

A study of the science program in rural high schools; the functions of the recognized high school sciences such as general science, biology, zoology, physics, chemistry, and physical geography, together with methods of teaching. Designed primarily for experienced teachers. Teachers will find it useful in connection with this course to take in addition at least one hour's work in Forestry S 1 and in Biology S 2, where problems in laboratory practice and technique will be presented.

S 141. The Preparation of Teachers for Rural Schools. Credit two hours. Daily except Sat., 10. *Caldwell* 100. Superintendent ANDERSON.

To meet the needs of those now responsible for the training of rural teachers or who are preparing for such duties. A general analysis of the teacher's work will first be made in order to determine the needs that teacher-training courses should supply. Ways and means of meeting these needs will then be considered in as much detail as time allows. A few of the problems for consideration are: training in school and in service; amount and character of differentiation for different types of teaching positions; the organization of materials into courses and curricula; types of teacher-training institutions and activities, such as training classes, county normal schools, state normal schools, correspondence courses, and teachers' institutes; facilities for observation and practice teaching; the organization of a department of rural education in a state normal school; the function of the state in the training of teachers.

S 248. Problems of Training Teachers of Home Economics. Credit two hours. Daily except Sat., 10. *Caldwell* 250. Miss CONLEY.

Designed to meet the needs of persons who have both technical preparation in home economics and experience in teaching, and who desire to prepare for the special problems involved in the professional work of preparing teachers of home economics. This course treats collegiate and secondary curricula in home economics with reference to the technical preparation of teachers, their professional needs, supervised teaching experience, and the organization and content of the

special courses in home economics. Consideration is also given to the subject matter of home economics and to correlations with other subject matter.

S 239. Problems of Agricultural College Teaching. Credit one or two hours. Registration by special permission. Lectures, M W F, 3. *Caldwell 294.* Professor WORKS.

This course will be devoted to a consideration of problems that are likely to arise in the organization of professional courses for instructors in colleges of agriculture.

S 222. Foundations of Method. Credit two hours. Daily except Sat., 12. *Goldwin Smith 242.* Professor MOORE.

This course is designed primarily for experienced elementary and high school teachers and supervisors. It will include a critical examination of current and proposed educational methods in the light of accepted principles of educational psychology. Special attention will be given to the theories involved in project-teaching. The course will include such topics as the laws of learning, interest and effort, the thinking process, the organization of experience, the relationship between subject matter and the educative process, discipline and moral training.

S 134. Supervised Practice in Vocational Agriculture. Credit two hours. Lectures, daily except Sat., 11. *Caldwell 294.* Professor FIELD.

A course dealing with objectives and criteria to be observed in selecting, planning, and supervising the practice work of students in Vocational Agriculture. Special emphasis on the problem method, farm skills, and the use of the farm resources in the teaching process.

MEASUREMENT

S 251. Educational Measurement. Credit two hours. Daily except Sat., 10. *Caldwell 282.* For teachers in the upper grades of the elementary school and in the high school. Mr. BAYNE.

A beginning course in educational measurement. Measurement in relation to the classification of pupils, the determination of the progress of pupils, individual difficulties, and the determination of final marks. Typical tests and scales, and elementary statistical terms and methods will be studied in their relation to the above problems.

S 253. Educational Measurement. Credit two hours. Daily except Sat., 9. *Caldwell 250.* Dr. ORLEANS.

A beginning course in measurement designed for students of child training and for teachers of the primary and intermediate grades. A study will be made of individual and group tests in relation to development, diagnosis, and classification of young children.

ADMINISTRATION

S 261. Principles of Rural School Administration. Credit two hours. Daily including Sat., 10. *Stone.* Professor BUTTERWORTH.

A consideration of problems in administration for the attainment of these objectives: (1) an understanding of significant questions that face the rural school administrator; (2) a comprehensive view of the organization of education in the state, particularly with reference to the rural situation; (3) the development of principles for the guidance of the administrator in attacking his problems. The approach will be through an analysis of specific administrative difficulties.

S 262c. The School Population. Credit two hours. Daily including Sat., 2. *Caldwell 250.* Dr. ORLEANS.

Typical problems: the school census; attendance; grading and promotion; retardation and elimination; homogeneous grouping; the visiting teacher; special classes.

S 267. Administration and Supervision of Vocational Agriculture. Credit two hours. Daily except Sat., 8. *Caldwell 294.* Professor WORKS.

This course is designed for persons engaged in the supervision of vocational agriculture or those planning to enter such work. It deals with administration and supervision of agricultural education under the Vocational Education Act;

State legislation; related Federal legislation; curricula. Visits to schools in New York and adjacent states are required as a part of the course.

S 269. Supervision and Administration of Home Economics. Credit two hours. Daily except Sat., 2. *Caldwell 294.* Miss CONLEY.

Intended for supervisors and for experienced teachers who are preparing for supervisory positions in home economics. The course is concerned with the analysis of the supervisor's work and with methods of supervision. Among the problems presented for study and investigation will be the organization and the administration of homemaking departments; departmental budgets; reports; equipment and building plans; principles underlying present-day changes in home economics education; principles underlying the organization of courses; evaluation of teaching; improvement of teachers in service; teachers' conferences and study classes.

S 276. The Curriculum for Rural Elementary Schools. Credit two hours. Daily except Sat., 8. *Caldwell 282.* Mr. ANDERSON.

What is the function of elementary education? How is the curriculum related to the accomplishment of this major purpose? What factors should be considered in making a curriculum for the rural elementary school? How should it be related to rural life? to agriculture? How should it be organized to fit the ungraded school? Should it differ at all from the curriculum for city schools? How should the contents of the curriculum be organized to promote most effective learning? In what respects is the teacher responsible? How do the answers affect the several school subjects?

Intended not only for those who are to work specifically in this field, but also for any whose work is related to it, such as nature study specialists, junior project leaders, and principals of elementary schools.

S 245. College Preparation of Teachers of Agriculture. Credit two hours. Open to graduate students of approved experience only. Lectures, daily except Sat., 3. *Caldwell 143.* Professor FIELD.

This course is based on a study of work of teachers of agricultural vocations in the secondary schools. In the light of such study will be discussed: the demands on the teacher, in terms of capacities and abilities; current and ideal standards of qualification in teachers; the aims, admission requirements, curricular organization, and methods of college preparation for prospective teachers of agriculture in secondary schools.

S 163. Problems of Rural Education in New York State. Credit two hours. Daily except Sat., 3. *Caldwell 100.* Mr. SNYDER.

An analysis of the educational situation in the smaller communities of New York will be made and methods of improvement will be discussed. The purpose of this course is to give a comprehensive survey of the rural school problems of the state including those of organization and administration, the teaching staff, the curriculum, school finance, community relations of the school, and school buildings.

S 65. Rural School Management. Credit two hours. Daily except Sat., 9. *Caldwell 100.* Mr. SNYDER.

This course is intended primarily for training class teachers and will be so planned as to suggest the materials that should be offered and the methods of instruction that may be employed in school management courses given in training classes. Questions of the internal organization of the school, making the schedule, discipline, teaching pupils to study, attendance, the playground, and the school library are among those that will be considered.

SECONDARY EDUCATION

S 281. The High School in Rural and Village Communities. Credit two hours. Daily except Sat., 11. *Caldwell 282.* Professor FERRIS.

A course dealing with basic problems of modern secondary education in its adaptation to rural and village conditions. Special consideration is given to the junior high school as a practicable form of secondary school organization for the rural or village community and to curriculum organization and content. Other guiding topics are: the scope and functions of secondary education; present de-

mands upon the rural and village high school; the senior high school in rural and village communities; prevocational and vocational work; educational and vocational guidance; extra-class activities; needed forms of extension work.

S 285. The Rural and Village Principalship. Credit two hours. Daily except Sat., 8. *Stone*. Professor FERRISS.

A course designed for principals and superintendents of rural and village schools having both the elementary and high school work, and for those preparing for such positions. It deals with such practical problems as the preliminary organization of the school; schedule making and distribution of teaching load; aims and methods of supervision; teachers' meetings; the training of teachers in service; measuring teachers' efficiency; testing, grading, and promotion of pupils; school government; direction and control of extra-class activities; guidance of pupils; supervision of studies; the principal and the community.

S 287. The Junior High School and the Rural Community. Credit two hours. Daily except Sat., 9. *Caldwell* 143. Mr. RAMSEY.

A survey of the development of the junior high school with particular reference to its function in rural communities. Discussion falls under such headings as causes contributory to the development of the junior high school; its place in the reorganization of public education; its aims and essential features; types of administrative organization; types of curricular organization; demands for adaptation in teaching-methods; the teaching force; buildings and equipment; provision for activities outside the classroom; and other problems incident to the establishment and operation of a junior high school in the small town or open country.

PHILOSOPHY OF EDUCATION

S 294. Education and Vocations. Credit two hours. Open to graduate students and seniors of approved qualification. Lectures, daily except Sat., 2. *Caldwell* 492. Professor EATON.

The course will consist in discussions of questions arising under the following general heads: the meaning of vocation; its origin and evolution; conservation and progress in economic society; the function of education in vocation; the organization of education with reference to vocation.

NOTE.—On July 14, 15, and 16 the New York State Congress of Parents and Teachers will conduct an Institute for the purpose of familiarizing school people and patrons with the ideals and activities of this organization.

RURAL ENGINEERING

S 11. Farm Mechanics. Credit two hours. Lectures, T Th F, 8. *Rural Engineering Laboratory*. Laboratory, T Th, 2-4:30. *Rural Engineering Laboratory*. Professor McCURDY.

A course in pumps, rams, water systems, sewage disposal, and plumbing for rural homes. Shallow and deep well pumps of different types will be studied and old pumps repaired. Various types of water systems, such as the simple gravity, pneumatic, and hydro-pneumatic systems will be considered and a simple system supplying hot and cold water for kitchen and bathroom will be installed. With the actual construction of a single chamber septic tank such correlated work as building the forms, placing the concrete, laying out for the tank, etc., will be covered. The plumbing work will consist of a study of kinds of pipe, pipe-friction, pipe-fittings and fixtures, and the installation of a water system necessitating such work as pipe cutting, pipe fitting, cutting soil pipe, pouring soil pipe, joints, etc. An all-day field trip is planned that several farms may be visited, levels run, data collected, and suitable water systems planned for each.

The selection of tools, publications, bulletins, and laboratory material for teaching the work to high school classes will be discussed. Laboratory fee, \$2.

S 12. Gas Engines. Credit two hours. Lectures, T Th F, 10. *Rural Engineering Laboratory*. Laboratory, W F, 2-4:30. *Rural Engineering Laboratory*. Assistant Professor FAIRBANKS.

A course in the principles and operation of gasoline and kerosene engines, including the study of the parts of engines and their names; the sequence of the events in the cycle of operation, the exact time of occurrence of each event and the reasons for such timing; the auxiliary equipment of the engine, including systems for fuel supply and carburetion, electric ignition, lubrication, governing, cooling; actual operation of engines; the adjustment of parts and detection and correction of troubles. Single cylinder engines will be used at first, the study of multicylinder engines being taken up if and when such study is warranted by the progress of the class in the work. Laboratory fee, \$2.

S 41. Farm Shop. Credit two hours. T Th, 2-4:30, and S, 8-1. *Rural Engineering Laboratory.* Assistant Professor ROEHL.

A course for teachers of agriculture in farm carpentry and such correlated drawing as farmers may find helpful in their construction and repair work; selection and care of farm shop tools; tool grinding, saw filing, fitting handles, window repairing, and painting. Special consideration is given to preparing men to teach this work as a part of the vocational course in agriculture. Laboratory fee, \$3.

S 42. Farm Shop. Credit two hours. M W, 2-4:30, and S, 8-1. *Rural Engineering Laboratory.* Assistant Professor ROEHL.

A course for teachers of agriculture in farm shop work including the following: harness repairing, rope work, farm blacksmithing. Special attention is given to the selection of jobs, to the best methods of doing these jobs, and to degrees of skill which should be attained in the performance of them. Students will be expected to demonstrate the performance of one such job. Consideration is given to the tool equipment necessary to meet the repairs and construction problems arising on various kinds and sizes of farms. The farm blacksmithing work is confined mainly to such forge work as will aid in the repairing of farm machinery and in the shaping and tempering of cold chisels, punches, picks, harrow teeth, etc. Laboratory fee, \$3.

RURAL SOCIAL ORGANIZATION

S 1. The Social Problems of Rural Communities. Credit two hours. Lectures and reports. Daily except Sat., 8. *Roberts 292.* Dr. KIRKPATRICK.

An introductory study of the social problems of rural communities, as a basis for the social organization of rural life. Some of the problems considered are health, standard of life, education, religion, the family, recreation, government, and community organization. Students are expected to draw specific material from their home communities.

S 2. General Sociology. Credit two hours. Students should have junior standing. Lectures and discussions. Daily except Sat., 11. *Roberts 292.* Acting Professor MELVIN.

The aims of the course are two; first, to study the structure and function of society; and, second, to give an appreciation of processes and forces which may be directed to wholesome societal development. The social structure, activities, influences, controls, and changes as exemplified in both urban and rural life constitute the subject matter of this study.

S 19. The Rural Church. Credit two hours. Daily except Sat., 11. *Roberts 92.* Professor FELTON.

The course considers the rural church as a social institution, its relation to other organizations and institutions of the rural community, and its objectives and program of work. Two field trips to rural churches will be required.

S 20. Pageantry. Credit three hours. Daily except Sat., 10. Two hours in the afternoon to be arranged. *Roberts Assembly.* Miss DUTHIE.

This course is designed to train local pageant leaders. Consideration is given to the historical development of pageantry; modern pageants, their occasions, uses, and varieties; typical pageants; planning and writing the pageant; organization of the group producing the pageant; grounds and stages; special problems of producing and staging; costuming, pageant acting, music, and dancing; and a survey of the literature of that subject.

Each student will be expected to write one or more pageants suitable for definite communities and occasions. Drill-work in reading lines, acting, grouping, and rehearsing of pageant episodes will be given.

S 22. Play Production. For students in the Summer School of Agriculture. Credit two hours. Daily except Sat., 11. *Goldwin Smith B.* Assistant Professor HULTZEN.

The object of this course is an analysis of problems and methods of play production for rural communities. The discussion deals with the choice of play; principles of staging and direction. Some time is devoted to practice in rehearsal, to elementary stage craft, and to make-up.

S 26. Club Organization for Boys and Girls. Credit two hours. Daily except Sat., 11. Also two hours in the afternoon to be arranged. *Roberts 292.* Miss DUTHIE.

This course, designed for leaders of rural boys and girls, considers the general problems of organization and the activities most suited to adolescents. Some time is devoted to specific programs suited to Boy Scouts, Girl Scouts, Camp Fire Girls, Woodcraft League, and Girl Reserves. The afternoon session will be devoted to woodcraft practice, demonstration of ceremonials, and excursions to camps.

S 204. Rural Standard of Living. Credit two hours. Daily except Sat., 9. *Roberts 92.* Dr. KIRKPATRICK.

This course deals with the technical, the economic, and the social aspects of the American farmer's standard of living. Economic and other measures are made of the different standards of living among families of different farming localities, of different tenures, of different trades or occupations. The relation of human needs, economic status, and local and national institutions to the standard of living are considered. The course attempts to offer practical assistance and to open new lines of thought to the investigator, the resident teacher, and the extension worker in the field of rural social organization.

S 16. Recreational Leadership. Credit two hours. Daily except Sat., 9. Two additional hours in the afternoon each week are required for practice in leading games. Hours to be arranged. *East Roberts 232.* Professor FELTON.

The aim of this course is to prepare students for recreational leadership in schools, granges, churches, and other community meetings. The following subjects are considered: the educational value of play; the periods of childhood and their relations to a course of play and games; play as physical training; play for the development of social relations; play for the formation of habits and character; the place of play in the home; the home playroom and playyard; school playgrounds; community playgrounds; recreation in the program of the church; recreational programs for community halls; and play days in rural schools.

S 206. Rural Community Organization. Credit two hours. Daily except Sat., 8. *Roberts 92.* Professor FELTON.

The aim of this course is to help rural teachers, school supervisors, county agents, and other rural leaders in the technique of organizing rural communities for unified, effective community service. Typical communities are analyzed and discussed to arrive at the problems involved and their solution. The methods of local organization in successful communities are studied. The programs of the groups, church, school, farm bureau, home bureau, cooperatives, lodges, and other social and economic institutions are discussed and related to a unified community program.

S 108. The Social Psychology of Rural Life. Credit two hours. For advanced students. Prerequisite course 1, one or more courses in psychology, and permission to register. Daily except Sat., 10. *Roberts 92.* Acting Professor MELVIN.

This course deals with the psychological development of the individual as a member of society, the sociological development and the actions of groups, and the relation of these two. General principles are drawn and applied from specific examples. This course seeks to take these principles and designate how they may be used in the rational direction of group life. This is done by an analysis of how group action produces specific results.

VEGETABLE GARDENING

S 1. Vegetable Gardening. Credit two hours. Lectures, T Th S, 8, S, 9. *Poultry* 174. Laboratory, S, 10-1. *Vegetable Greenhouses and Gardens*. Professor WORK.

An introductory course dealing with the vegetable plants and the principles of their production, including, management, seed and varieties, plant growing, cultural requirements, enemies, marketing, and returns. The laboratory work will afford opportunity for first-hand acquaintance with the plants and practices. The course is broadly planned rather than narrowly specialized and will serve those who wish a brief introduction to vegetable gardening, whether teachers, college students, or others. There will be one all-day Saturday trip to a vegetable producing section at a cost of \$3 to \$5.

S 112. Systematic Vegetable Crops. Credit one hour. Lectures and laboratories, M W, 2-5. *Vegetable Gardens*, East Ithaca. Professor WORK.

Origin, history, taxonomy, types and varieties, improvement problems; description, classification, nomenclature, exhibition, and judging. Leading varieties of the vegetable crops are grown in the gardens supplying material for field study of the plants and types.

This course is planned for any who are interested in the subject whether specializing in Vegetable Gardening or not. It is well for it to be preceded by an elementary course, but this is not essential.

INDEX

- Admission*, 12.
 AGRICULTURE, SUMMER SCHOOL OF, 55.
 Aquiculture, 59.
 Astronomy, 20.
 Bacteriology, 54, 59.
 BIOLOGY, SUMMER SCHOOL OF, 49.
 Biology, general, 59.
Board, 14, 15.
 Botany, 50, 59.
Calendar, 3.
Certificates of work done, 11.
Chapel, Sage, 18.
 Chemistry, 20.
 Chorus, 39.
 Climatology, 63.
Concerts, 18.
Conduct, 12.
Cost of living, 16.
Credit, academic, 9, 58.
 Cytology, 54.
 Descriptive Geometry, 27.
 Dramatics, 45.
 Drawing, 23, 27.
 Economics, 23; agricultural, 58.
 Education, 24; rural, 65.
 Engineering, 27.
 English, 29.
 Entomology, 52, 60.
Excursions, 33.
 Farm Management, 58.
Fees, 14; *graduate*, 10; *agriculture*, 13, 57.
 Floriculture, 60.
 Forestry, 61.
 French, 46.
 Gardening, Vegetable, 72.
 Genetics, 53.
 Geography, 31.
 Geology, 31.
 German, 34.
 Government, 35.
Graduate work, 10.
 Greek, 37.
 Health Education, 41.
Health, the student's, 16.
 History, 35.
 Home Economics, 62; teaching of, 66.
 Horticulture, Ornamental, 60.
 Hydraulics, 28.
Infirmary, 17.
 Kinematics, 28.
 Latin, 36.
 LAW, SUMMER SESSION, 48.
Lectures, general, 18.
Libraries, 17.
 Mathematics, 37.
 Measurement, Educational, 25, 67.
 Mechanics, 28.
Medical advice, 16.
 Meteorology, 63.
 Music, 38.
 Nature Study, 63.
Object of the Session, 9.
 Oral English, 44.
Organ recitals, 18.
 Ornithology, 63.
 Painting, 23.
 Philosophy, 39.
 Physical Education, 39.
 Physics, 41.
 Plant Physiology, 50.
 Pomology, 64.
 Poultry Husbandry, 64.
 Psychological examiners' training course, 26.
 Psychology, 43; educational, 24, 65.
 Public Speaking, 44, 64.
Railroad routes, 19.
Registration, 12.
Research, 11, 54.
Residential halls, 14, 15.
 Romance Languages, 46.
Rooms, 14, 15.
 Rural Education, 65.
 Rural Engineering, 69.
 Rural Organization, 70.
Self-Support, Means of, 16.
 Sociology, 23.
 Spanish, 47.
 Structural Engineering, 28.
 Teachers' courses in high school subjects, 26.
 Teaching, Principles of, 65.
Tuition, 13; *graduate*, 10; *agriculture*, 57; *law*, 13.
 Vegetable Gardening, 72.
Willard Straight Hall, 18.
 Zoology, 51.

CORNELL UNIVERSITY OFFICIAL PUBLICATION

Entered as second-class matter, December 14, 1916, at the post office at Ithaca, New York, under the Act of August 24, 1912.

Issued at Ithaca, New York, twice a month from December to June inclusive, and monthly from July to November inclusive.

This series of pamphlets is designed to give prospective students and other persons information about Cornell University. No charge is made for the pamphlet unless a price is indicated after its name in the list below. Requests for pamphlets should be addressed to the Secretary of the University at Ithaca. *Money orders should be made payable to CORNELL UNIVERSITY.*

The prospective student should have a copy of the
General Circular of Information

and a copy of one or more of the following Announcements:

Announcement of the College of Arts and Sciences.

Announcement of the College of Engineering.

Announcement of the Law School.

Announcement of the College of Architecture.

Announcement of the New York State College of Agriculture.

Announcement of the Winter Courses in the College of Agriculture.

Announcement of the New York State College of Home Economics.

Announcement of the New York State Veterinary College.

Announcement of the Department of Chemistry.

Announcement of the Graduate School.

Announcement of the Summer Session.

Announcement of the Summer Session of the Law School.

Announcement of the Summer School of Biology.

Program of the Annual Farmers' Week.

Annual Report of the President.

Special departmental announcements, a list of prizes, etc.

Other periodicals are these:

The *Register*, published annually in August, and containing, not announcements of courses, but a comprehensive record of the University's organization and work during the last year. Price, 50 cents.

Guide to the Campus. Illustrated. Price, 50 cents.

Directory of the University. Price, 10 cents.

The *Announcement of the Medical College* may be obtained by addressing the Cornell University Medical College, Ithaca, New York.

Correspondence regarding the Cornell University Official Publication should be addressed to

THE SECRETARY, CORNELL UNIVERSITY,
ITHACA, NEW YORK.